

PROJECT MANUAL
FOR THE CONSTRUCTION OF SEDIMENT TRAP
AND DECANTING BASIN

Mill Pond, LaPorte County, Indiana

Noble Township Environmental and Improvement Association

Noble Township Environmental and Improvement Association
P.O. Box 67
Union Mills, Indiana 46382

February 25, 1993

Project Manual Prepared By:

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INVITATION TO BID

NOTICE IS HEREBY GIVEN that the Noble Township Environmental and Improvement Association, hereinafter referred to as the NTEIA, will receive sealed bids for the construction of a sediment trap and decanting basin at Mill Pond, on Mill Creek in LaPorte County, Indiana. The project includes dredging of approximately 3,000 yards of sediment from Mill Pond, the excavation of a decanting basin, also water control structures, an access road, and restoration and seeding of excavated areas.

Bids may be forwarded by mail addressed to the NTEIA in care of: **Noble Township Environmental and Improvement Association, Union Mills**, P.O. Box 67, Indiana 46382. Bids will be opened at a public meeting at the Union Mills Conservation Club at _____ local prevailing time, on _____, 1993. Any Bid received after the bid opening process has begun will be returned unopened.

No Bid shall be withdrawn after the bid opening date without the consent of the NTEIA for a period of sixty (60) days.

Each Bid must be enclosed in a sealed envelope bearing the title of the project and the name and address of the Bidder.

Bids shall be properly and completely executed on the bid forms provided by the NTEIA.

Each Bidder shall file a certified check or bid bond with each bid, in an amount equal to five percent (5%) of the total bid proposal, as evidence of good faith that the successful bidder will execute within ten (10) consecutive calendar days from the acceptance of the bid proposal, a Contract as set out in the specifications.

The Instructions to Bidders contained in the Contract Documents are by this reference made a part hereof and all bidders shall be deemed advised of provisions thereof and the conditions of the Contract, Specifications and Drawings for this project.

Approved Performance and Payment Bonds guaranteeing faithful and proper performance of the work and materials, to be executed by an acceptable surety company, will be required of each contractor at the time he executes his contract. The bond will be in the amount of one hundred percent (100%) of the contract price and must be in full force and effect for a period of twelve (12) months from the date of written acceptance of an final payment for the work.

The NTEIA reserves the right to reject any bid, or all bids, or to accept any bid or bids,

or to make such combination of bids as may seem desirable, and to waive any and all informalities in the bidding.

One copy each of the plans, specifications and bidding documents may be obtained from the NTEIA upon receipt of \$_____ in the form of a check made payable to Noble Township Environmental and Improvement Association. On or about thirty days after the bid opening, a refund will be made to all bidders who have returned plans in good condition prior to that date.

INSTRUCTIONS TO BIDDERS

1. DEFINED TERMS.

Terms used in these Instructions to Bidders which are defined in the Standard General Conditions of the Construction contract (No. 1910-8, 1983 edition) have the meaning assigned to them in the General Conditions. The term "Bidder" means one who submits a Bid directly to NTEIA, as distinct from a sub-bidder, who submits a bid to a Bidder. The term "Successful Bidder" means the lowest, qualified, responsible and responsive Bidder to whom NTEIA (on the basis of NTEIA's evaluation as hereinafter provided) makes an award. The term "Bidding Documents" includes the Advertisement or Invitation to bid, Instructions to Bidders, the Bid form, and the proposed Contract Documents (including all addenda issued prior to receipt of Bids.)

2. COPIES OF BIDDING DOCUMENTS.

2.1 Complete sets of the Bidding Documents in the number and for the deposit sum, if any, stated in the Advertisement or Invitation to Bid may be obtained from the NTEIA. The refundable portion of the bid deposit will be returned to bid document holders of record who return the Bidding Documents in good condition. refund will be made on or about the 30th day after the Bid Opening Date.

2.2 Complete sets of Bidding Documents must be used in preparing Bids; neither NTEIA nor Consultant assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

2.3 NTEIA and Consultant in making copies of Bidding Documents available on the above terms do so only for the purpose of obtaining Bids on the Work and do not confer a license or grant for any other use.

3. QUALIFICATIONS OF BIDDERS.

Each Bid must contain evidence of Bidder's qualification to do business in the state where the Project is located or convenient to obtain such qualification prior to award of the contract.

4. EXAMINATION OF CONTRACT DOCUMENTS AND SITE.

4.1 It is the responsibility of each Bidder before submitting a Bid, to (a) examine the Contract Documents thoroughly, (b) visit the site to become familiar with local conditions that may affect cost, progress, performance or furnishing of the Work, (c) consider federal, state and local Laws and Regulations that may affect cost, progress, performance or furnishing of the Work, (d) study and carefully correlate Bidder's observations with the Contract Documents, and (e) notify NTEIA or Consultant of all conflicts, errors or discrepancies in the Contract Documents.

4.2 Information and data reflected in the Contract Documents with respect to Underground Facilities at or contiguous to the site is based upon information and data furnished to NTEIA and Consultant by owners of such Underground Facilities or others, and NTEIA does not assume responsibility for the accuracy or completeness thereof unless it is expressly provided otherwise in the Supplementary Conditions.

4.3 Before submitting a Bid, each Bidder will be responsible to make or obtain such explorations, tests and data concerning physical conditions (surface, subsurface and Underground Facilities) at or contiguous to the site, or otherwise which may affect cost, progress, performance or furnishing of the Work and which Bidder deems necessary to determine its Bid for performing and furnishing the Work in accordance with the time, price and other terms and conditions of the Contract Documents.

4.4 On request in advance, NTEIA will provide each Bidder access to the site to conduct such explorations and tests as each Bidder deems necessary for submission of a Bid. Bidder shall fill all holes, clean up and restore the site to its former condition upon completion of such explorations.

4.5 The lands upon which the Work is to be performed, rights-of-way and easements for access thereto and other lands designated for use by Contractor in performing the Work are identified in the Contract Documents. All additional lands and access thereto required for temporary construction facilities or storage of materials and equipment are to be provided by Contractor. Easement for permanent structures or permanent changes in existing structures are to be obtained and paid for by the NTEIA unless otherwise provided in the Contract Documents.

4.6 The submission of a bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 4, that without exception the Bid is premised upon performing methods, techniques, sequences or procedures of construction, as may be indicated in or required by the Contract Documents, and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

5. INTERPRETATIONS AND ADDENDA.

5.1 All questions about the meaning or intent of the Contract Documents are to be directed to Consultant. Interpretations or clarifications considered necessary by Consultant in response to such questions will be issued by Addenda and mailed or delivered to all parties recorded by Consultant as having received the Bidding Documents. Questions received less than ten days prior to the date for opening of Bids may not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

5.2 Addenda may also be issued to modify the Bidding Documents as deemed advisable by NTEIA or Consultant.

6. BID SECURITY.

6.1 Each Bid must be accompanied by Bid security made payable to NTEIA in an amount of five percent of the Bidder's maximum Bid price and in the form of a certified or bank check or a Bid Bond issued by a surety meeting the requirements of Paragraph 5.1 of the General Conditions.

6.2 The Bid security of the Successful Bidder will be retained until such Bidder has executed the Agreement and furnished the required contract security, whereupon the Bid security will be returned. If the Successful Bidder fails to execute and deliver the Agreement and furnish the required contract security within fifteen days after the Notice of Award, NTEIA may annul the Notice of Award and the Bid security of that Bidder will be forfeited. The Bid security of other bidders whom NTEIA believes to have a reasonable chance of receiving the award may be retained by NTEIA until the earlier of the seventh day after the Effective Date of the Agreement or the forty-sixth day after the bid opening, whereupon Bid security furnished by such Bidders will be returned.

7. **CONTRACT TIME.**

The numbers of days within which, or the dates by which, the work is to be substantially completed and also completed and ready for final payment (the Contract Time) are set forth in the Bid Form, the Agreement, and in the latter sections of these Instructions to Bidders.

8. **LIQUIDATED DAMAGES.**

Provisions for liquidated damages, if any, are set forth in the Agreement and in the latter sections of these Instructions to Bidders.

9. **SUBSTITUTE OR "OR-EQUAL" ITEMS.**

The contract, if awarded, will be on the basis of materials and equipment described in the Drawings or specified in the Specifications without consideration of possible substitute or "or-equal" items. Whenever it is indicated in the Drawings or specified in the Specifications that a substitute or "or-equal" item of material or equipment may be furnished or used by Contractor if acceptable to Consultant, application for such acceptance will not be considered by Consultant until after the Effective Date of the Agreement. The procedure for submission of any such application by Contractor and consideration by Consultant is set forth in Paragraphs 6.7.1, 6.7.2 and 6.7.3 of the General Conditions and may be supplemented in the General Requirements.

10. **SUBCONTRACTORS, SUPPLIERS AND OTHERS.**

10.1 If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, and other persons and organizations (including those who are to furnish the principal items of material and equipment) to be submitted to NTEIA in advance of the specified date prior to the Effective Date of the Agreement, the apparent Successful Bidder, and any other Bidder so requested, shall within seven days after the Bid opening submit to NTEIA a list of all such Subcontractors, Suppliers, and other persons and organizations proposed for those portions of the Work for which such identification is required. Such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, person or organization if requested by NTEIA. If NTEIA or Consultant after due investigation has reasonable objection to any proposed Subcontractor,

Supplier, other person or organization, either may before the Notice of Award is given request the apparent Successful Bidder to submit an acceptable substitute without an increase in Bid price.

If apparent Successful Bidder declines to make any such substitution, NTEIA may award the contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers, and other persons and organizations. The declining to make requested substitutions will not constitute grounds for sacrificing the Bid security of any Bidder. Any Subcontractor, Supplier, other person or organization listed to whom NTEIA or Consultant does not make written objection prior to the giving of the Notice of Award will be deemed acceptable to NTEIA and Consultant, subject to revocation of such acceptance after the Effective Date of the Agreement as provided in Paragraph 6.8.2 of the General Conditions.

10.2 In contracts where the Contract Price is on the basis of Cost-of-the-Work Plus a Fee, the apparent Successful Bidder, prior to the Notice of Award, shall identify in writing prior to the Notice of Award, shall identify in writing to NTEIA those portions of the Work that such Bidder proposes to subcontract and after the Notice of Award may only subcontract other portions of the Work with NTEIA's written consent.

10.3 No Contractor shall be required to employ any Subcontractor, Supplier, other person or organization against whom Contractor has reasonable objection.

11. BID FORM.

11.1 The Bid Form is included with the Bidding Documents; additional copies may be obtained from Consultant (or the issuing office).

11.2 All blanks on the Bid Form must be completed in ink or by typewriter.

11.3 Bids by corporations must be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal must be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation must be shown below the signature.

11.4 Bids by partnerships must be executed in the partnership name and signed by a partner, whose title must appear under the signature and the official address

of the partnership must be shown below the signature.

11.5 All names must be typed or printed below the signature.

11.6 The Bid shall contain an acknowledgement of receipt of all Addenda (the number of which must be filled in on the Bid Form).

11.7 The address and telephone number for communications regarding the Bid must be shown.

12. SUBMISSION OF BIDS.

12.1 Bids shall be submitted at the time and place indicated in the Advertisement or Invitation to Bid and shall be enclosed in an opaque sealed envelope, marked with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted) and name and address of the Bidder and accompanied by the Bid security and other required documents. If the Bid is sent through the mail or other delivery system, the sealed envelope shall be enclosed in a separate envelope with the notation "BID ENCLOSED" on the face of it.

12.2 It is the intent of the NTEIA to open Bids immediately after the designated time in the Advertisement for Bids. However, the NTEIA reserves the right to delay the Bid opening process in the event of unforeseen circumstances as determined by the NTEIA that may be a factor in delaying a Bidder from delivering the Bid on time. No Bids will be received or opened after the Bid opening Process has begun.

13. MODIFICATION AND WITHDRAWAL OF BIDS.

13.1 Bids may be modified or withdrawn by an appropriate document duly executed (in the manner that a Bid must be executed) and delivered to the place where Bids are to be submitted at any time prior to the opening of Bids.

13.2 If, within twenty-four hours after Bids are opened, any Bidder files a duly signed, written notice with NTEIA and promptly thereafter demonstrates to the reasonable satisfaction of NTEIA that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid and the Bid security will be returned. Thereafter, that Bidder will be disqualified from further bidding on the Work to be provided under the Contract Documents.

14. OPENING OF BIDS.

Bids will be opened and read publicly.

15. AWARD OF CONTRACT.

15.1 NTEIA reserves the right to reject any and all Bids, to waive any and all informalities not involving price, time or changes in the Work, and to negotiate contract terms with the Successful Bidder, and the right to disregard all nonconforming, not responsive, unbalanced or conditional Bids. Also, NTEIA reserves the right to reject the Bid of any Bidder if NTEIA believes that it would not be in the best interest of the Project to make an award to that Bidder, whether because the Bid is not responsive or the Bidder is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by NTEIA. Discrepancies in the multiplication of units of Work and unit prices will be resolved in favor of unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

15.2 In evaluating Bids, NTEIA will consider the qualifications of the Bidders, whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices and other data, as may be requested in the bid form or prior to the Notice of Award.

15.3 NTEIA may consider the qualifications and experience of Subcontractors, Suppliers, and other persons and organizations proposed for those portions of the Work as to which the identity of Subcontractors, Suppliers, and other persons and organizations must be submitted as provided in the Supplementary Conditions. NTEIA also may consider the operating costs, maintenance requirements, performance data, and guarantees of major items of materials and equipment proposed for incorporation in the Work when such data is required to be submitted prior to the Notice of Award.

15.4 NTEIA may conduct such investigations as NTEIA deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications, and financial ability of Bidders, proposed Subcontractors, suppliers, and other persons and organizations to perform and furnish the Work in accordance with the Contract Documents to NTEIA's satisfaction within the prescribed time.

15.5 If the contract is to be awarded, it will be awarded to the lowest Bidder whose evaluation by NTEIA indicates to NTEIA that the award will be in the best interests of the Project.

16. CONTRACT SECURITY.

Paragraph 5.1 of the General Conditions and the Supplementary Conditions set forth NTEIA's requirements as to performance and payment Bonds. When the Successful Bidder delivers the executed Agreement to NTEIA, it must be accompanied by the required performance and payment Bonds.

17. SIGNING OF AGREEMENT.

When NTEIA gives a Notice of Award to the Successful Bidder, it will be accompanied by the required number of unsigned counterparts of the Agreement with all other written Contract Documents attached. Within fifteen days thereafter Contractor shall sign and deliver the required number of counterparts of the Agreement and attached documents to NTEIA with the required Bonds. Within ten days thereafter, NTEIA shall deliver one fully signed counterpart to Contractor.

18. LETTER FROM SURETY.

In addition to the Bid bond, the Bidder shall submit a letter or statement from the Bidder's surety company that it will execute and deliver a one hundred percent surety bond.

19. SECURITY FOR FAITHFUL PERFORMANCE.

Simultaneously with the delivery of the executed contract, the Contractor shall furnish a surety bond or bonds as security for faithful performance of this contract for the payment of all persons performing labor on the Project under this contract and furnishing materials in connection with this contract, as specified in the General Conditions included herein. The surety on such bond or bonds shall be a duly authorized surety company satisfactory to the NTEIA.

20. POWER OF ATTORNEY.

Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond

a certified and effectively dated copy of their power of attorney.

21. LAWS AND REGULATIONS.

The Bidder's attention is directed to the fact that all applicable State laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the Project shall apply to the contract throughout, and they will be deemed to be included in the Contract the same as though herein written out in full.

22. SAFETY STANDARDS AND ACCIDENT PREVENTION.

With respect to all work performed under this Contract, the Contractor shall:

- a. Comply with the safety standards provisions of applicable laws, building and construction codes, and the "Manual of Accident Prevention in Construction" published by the Associated General Contractors of America, the requirements of the Occupational Safety and Health Act of 1970 (Public Law 91-596), and the requirements of Title 29 of the code of Federal Regulations, Section 1518 as published in the "Federal Register", Volume 36, No. 75, Saturday, April 17, 1971.
- b. Exercise every precaution at all times for the prevention of accidents and the protection of persons (including employees) and property.
- c. Maintain at his office or other well-known place at the job site, all articles necessary for giving first aid to the injured, and shall make standing arrangements for the immediate removal to a hospital or a doctor's care of persons (including employees), who may be injured on the job site. In no case shall employees be permitted to work at a job site before the employer has made a standing arrangement for removal of injured persons to a hospital or a doctor's care.

23. TAX EXEMPTIONS.

The Indiana Department of Revenue requires that the Contractor or Subcontractors engaged in a contract with a governmental agency must submit an exemption certificate for construction contractors (Form SP 134) to each supplier for each exempt Project. The NTEIA will cooperate with the Contractor in filing the

necessary forms with the Indiana Department of Revenue, but the Contractor shall be responsible for the initiation of these proceedings. The contract price will be based upon a complete exemption from this tax, and if later determined that a tax must be paid by the NTEIA, the contract price will be adjusted to reflect this liability to NTEIA.

24. ESCROW ACCOUNT(S).

The establishment of an escrow account between the NTEIA and the successful Bidder(s) for the retainage will be left to the sole discretion of the successful Bidder(s).

25. BIDS TO REMAIN OPEN.

All Bids shall remain open for sixty (60) days after the day of the bid opening. The NTEIA may release any Bid and return the Bid security prior to that date.

26. COMPLETION TIME AND LIQUIDATED DAMAGES.

The Bidder shall submit as a part of the bid package a proposed Schedule for completion of the project. The Completion Schedule and Liquidated Damages will be negotiated as part of the Agreement the NTEIA and the Contractor. The Schedule shall be based on workable days for the controlling operation of the project.

27. FAMILIARITY WITH PROJECT SITE.

All Bidders are required to walk the project on the day of the Pre-Bid Conference or at any time prior to the preparation of their Bids.

28. UNIFIED CONTRACT.

A unified contract will be received for all items bid. Subcontractors shall not submit separate bids.

29. LUMP SUM CONTRACT.

Unit prices shall be submitted as a part of the bid; however, unit prices are indicated only to establish unit prices in the event that quantities may be changed

by agreement between the NTEIA and the Contractor. The Bidder shall satisfy himself as to the accuracy of the established quantities and accept lump sum payment for the completed project. Payment shall be according to Article 14 of the General Conditions. Special attention is directed to Item No. 7, S-150 Erosion Control Blankets. Such Items shall be placed and paid for as required and directed by the NTEIA.

30. LIABILITY INSURANCE.

The successful Bidder shall provide proof of liability insurance in the amount of one million dollars (\$1,000,000.00) as set forth in Article 5.3 of the General Conditions.

31. REFERENCES.

As a part of the Bid Package each Bidder shall include references for the last three completed projects with a total project amount above ten thousand dollars (\$10,000.00). The references shall contain the following information:

1. Name of person or agency contracted with
2. Address of person or agency
3. Contact person
4. Phone number
5. Brief description of Project

32. ALTERNATE BIDS.

Bidders must bid on all alternate bids.

33. SUMMARY OF ITEMS TO BE SUBMITTED WITH BID.

1. Bid Form - Completely executed and signed (including Alternate Bid(s))
2. Bid Security - Acceptable bid bond or cashier's check in an amount not less than 5% of the total bid price.
3. Letter from Surety.
4. Proof of insurance or ability to obtain insurance.
5. Completion Schedule
6. References for last 3 completed projects.

BID

Construction of Sediment Trap and Decanting Basin

Mill Pond, LaPorte County, Indiana

TO: Noble Township Environmental and Improvement Association
P.O. Box 67
Union Mills, Indiana 46382

1. The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an Agreement with NTEIA in the form included in the Contractor Documents for the Contract Price and within the Contract Time indicated in this Bid and in accordance with the Contract Documents.
2. BIDDER accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid Security. This Bid will remain open for thirty (30) days after the day of Bid opening. BIDDER will sign the Agreement and submit the Contract Security and other documents required by the Contract Documents within fifteen (15) days after the date of NTEIA's Notice of Award.
3. In submitting his Bid, BIDDER represents, as more fully set forth in the Agreement, that:
 - a. BIDDER has examined copies of all the Contract Documents, Advertisement or Invitation to Bid and the Instructions to Bidders, and BIDDER has examined copies of (receipt of all of which are hereby acknowledged).
 - b. BIDDER has familiarized itself with the nature and extent of the Contract Documents, Work, site, locality and all local conditions and Laws and Regulations that in any manner may affect cost, progress, performance, or furnishing of Work.
 - c. BIDDER has studied carefully all reports and drawings of subsurface conditions and drawings of physical conditions which are identified in the Supplementary Conditions as provided in Paragraph 4.2 of the General Conditions, and accepts the determination set forth in Paragraph SC4.2 of

the Supplementary Conditions of the extent of the technical data contained in such reports and drawings upon which BIDDER is entitled to rely.

- d. BIDDER has obtained and carefully studied (or assumes) responsibility for obtaining and carefully studying all such examinations, investigations, explorations, tests, and studies, (in addition to or to supplement those referred to in "c" above. which pertain to the subsurface or physical conditions at the site or otherwise may affect the cost, progress, performance, or furnishing of the Work as BIDDER considers necessary for the Contract Time and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of Paragraph 4.2 of the General Conditions; and no additional examinations, investigations, explorations, tests, reports, or similar information or data are or will be required by BIDDER for such purpose.
- e. BIDDER has reviewed and checked all information and data shown or indicated on the Contract Documents with respect to existing Underground Facilities at or contiguous to the site and assumes responsibility for the accurate location of said Underground Facilities. No additional examinations, investigations, explorations, tests, reports, or similar information of date in respect of said Underground Facilities are or will be required by BIDDER in order to perform and furnish the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of Paragraph 4.3 of the General Conditions.
- f. BIDDER has correlated the results of all such observations, examinations, investigations, explorations, tests, reports, and studies with the terms and conditions of the Contract Documents.
- g. BIDDER has given Consultant written notice of all conflicts, errors, or discrepancies that it has discovered in the Contract Documents and the written resolution thereof by Consultant is acceptable to BIDDER.
- h. This Bid is genuine and not made in the interest or on behalf of any undisclosed person, firm, or corporation; BIDDER has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; refrain from bidding; and BIDDER has not sought by collusion to obtain for itself any advantage over any other Bidder or over NTEIA.

4. BIDDER will complete the Work for the following prices: (Where lump sum figures are used, the Contractor shall furnish to the Engineer upon request a detailed breakdown of said lump sum cost. Where unit and unit price figures are used as part of the Bid, they will be used in computing the Contractor's payments. Quantities are not guaranteed. Final payment will be based upon the actual quantities placed in the Work.
5. BIDDER shall complete itemized unit prices and extensions and forward each total for the Base Bid and Mandatory Alternate Bids to this page.
6. BIDDER may attach separate proposal forms in addition to this bid form.

BASE BID

CONSTRUCTION OF SEDIMENT TRAP AND DECANTING BASIN

\$ _____

7. The following documents are attached to and made a condition of this Bid:
 - a. Bid Security in the form of a bidder's bond or cashier's check in the amount of not less than five percent of the total bid price.
 - b. Letter from Surety
 - c. Proof of insurance or ability to obtain insurance.
 - d. Completion Schedule
 - e. References
8. The terms used in the Bid which are defined in the General Conditions of the Construction Contract included as part of the Contract Documents have the meanings assigned to them in the General Conditions.

9. Submitted on _____, 1993.

By: Contractor

(Corporation____) (Partnership____) (Individual____)

(SEAL)

By _____

Signature of Person Authorized to Sign

Name and Title of Person Authorized to Sign

Business Address

Phone Number: (____) _____

BID

CONSTRUCTION OF SEDIMENT TRAP AND DECANTING BASIN

MILL POND, LaPORTE COUNTY, INDIANA

BASE BID

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE		AMOUNT	
				DOLS.	CNTS	DOLLARS	CENTS
1	Excavation of sediment trap	3,000	Cubic Yards				
2	Excavation for decanting basins	N/A	Cubic Yards				
3	Inlet/Outlet Pipes	(2) 15" Dia.	Lineal Feet				
4	Rip-Rap for Spillways	N/A	Cubic Yards				
5	Seeding for Berms, Excavated Areas	N/A	Pounds				
6	Geotextile Fabric	N/A	Lineal Feet				
7	Erosion Control Blankets	N/A	Square Yards				
8							
9							
10							
11							
12							
13							
14							
15							
	TOTAL						

NOTICE OF AWARD

Date: _____, 19__

To Contractor:

PROJECT: (Insert name of Contract as it appears in the Bid Documents)

You are hereby notified that your Bid dated _____, 19__, for the above Contract has been evaluated and you are the apparent successful bidder. You have been awarded a contract for (insert description of work, including which, if any alternate bids)

The Contract Price of your contract is \$_____.

Three copies of the proposed Agreement (Contract) accompany this Notice of Award. Three sets of plans and project manual will be delivered separately or otherwise be made available to you.

You must comply with the following conditions within fifteen days of the date of this Notice of Award, that is by _____, 19__.

1. You must deliver to the NTEIA three fully executed counterparts of the agreement (Contract). Each of the Agreements must bear your signature.
2. You must deliver the Contract Securities (Performance and Payment Bonds) as specified in the Instructions to Bidders, General Conditions and Supplementary Conditions.
3. You must deliver the Certificates of insurance as specified in the General Conditions and Supplementary Conditions (Paragraph S.C. 5.3).

4. (List other conditions, if applicable):

Failure to comply with these conditions within the time specified will entitle NTEIA to consider your bid abandoned, to annul this Notice of Award and to declare your Bid Security forfeited.

Within ten days after you comply with these conditions, NTEIA will return to you one fully signed counterpart of the Agreement for your records.

Noble Township Environmental and Improvement Association

(President)

P.O. Box 67
Union Mills, Indiana 46382

cc: J.F. New & Associates, Inc.
708 Roosevelt Road
Walkerton, Indiana 46574

**AGREEMENT BETWEEN
NOBLE TOWNSHIP ENVIRONMENTAL AND IMPROVEMENT ASSOCIATION
AND CONTRACTOR**

THIS AGREEMENT is by and between the **Noble Township Environmental and Improvement Association** (hereinafter called NTEIA) and _____
(hereinafter called CONTRACTOR).

NTEIA and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

ARTICLE 1. WORK

CONTRACTOR shall complete all Work as specified or indicated in the Contract Documents. The Project is generally described as follows: (insert the project description as it appears in the Notice of Award, including which, if any, alternate bids):

ARTICLE 2. CONSULTANT

The Project has been partially designed by J.F. New & Associates, Inc., Walkerton, Indiana, who is hereinafter called CONSULTANT and who is to act as NTEIA'S representative, assume all duties and responsibilities and have the rights and authority assigned to CONSULTANT in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

ARTICLE 3. CONTRACT TIME.

3.1 The Work will be substantially completed within _____ consecutive calendar days from the date when the Contract Time commences to run as provided in paragraph 2.3 of the General Conditions, and completed and ready for final payment in accordance with paragraph 14.13 of the General conditions within consecutive calendar days from the date when the Contract Time commences to run.

3.2 Liquidated Damages. NTEIA and CONTRACTOR recognize that time is of the essence of this Agreement and that NTEIA will suffer financial loss if the Work is not completed within

the times specified in paragraph 3.1 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. Contractor agrees to pay as liquidated damages, a sum which shall be based upon the actual dollar cost incurred by the Contractor's delay.

ARTICLE 4. CONTRACT PRICE.

4.1 NTEIA shall pay CONTRACTOR for completion of the Work in accordance with the contract Documents, in current funds, as follows: \$_____. This Contract Price includes (insert information on the base bid and which, if any, alternate bids:

ARTICLE 5. PAYMENT PROCEDURES.

CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by CONSULTANT as provided in the General Conditions.

5.1 Progress Payments. NTEIA shall make progress payments on account of the contract Price on the basis of CONTRACTOR'S Applications for Payment as recommended by CONSULTANT, on or about the _____ day of each month during construction, as provided below. All progress payments will be on the basis of the progress of the Work measured by the schedule of values established in paragraph 2.9 of the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided in the General Requirements.

5.1.1 Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below, but in each case, less the aggregate of payments previously made and less such amount as CONSULTANT shall determine, or NTEIA may withhold, in accordance with paragraph 14.7 of the General Conditions.

95% of Work completed.

95% of materials and equipment not incorporated in the Work (but delivered, suitably stored and accompanied by documentation satisfactory to NTEIA as provided in paragraph 14.2 of the General Conditions.

- 5.1.2 Upon Substantial Completion, in an amount sufficient to increase total payments to CONTRACTOR to 98% of the Contract Price, less such amounts as CONSULTANT shall determine, or NTEIA may withhold, in accordance with paragraph 14.7 of the General Conditions.

5.2 Final Payment. Upon final completion and acceptance of the Work in accordance with paragraph 14.13 of the General Conditions, NTEIA shall pay the remainder of the Contract Price as recommended by CONSULTANT as provided in said paragraph 14.13.

ARTICLE 6. INTEREST.

All moneys not paid when due as provided in Article 14 of the General conditions may bear interest at the maximum rate allowed by law at the place of the Project.

ARTICLE 7. CONTRACTOR'S REPRESENTATIONS.

In order to induce NTEIA to enter into this Agreement, CONTRACTOR makes the following representations:

- 7.1 CONTRACTOR has familiarized itself with the nature and extent of the contract Documents, Work, site, locality, and all local conditions and Laws and Regulations that in any manner may affect cost, progress, performance or furnishing of the Work.
- 7.2 CONTRACTOR has studied carefully all reports of explorations and tests of subsurface conditions and drawings of physical conditions which are identified in the Supplementary Conditions as provided in paragraph 4.2 of the General Conditions, and accepts the determination set forth in paragraph SC-4.2 of the Supplementary Conditions of the extent of the technical data contained in such reports and drawings upon which CONTRACTOR is entitled to reply.
- 7.3 CONTRACTOR has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) all such examinations, investigations, explorations, tests, reports and studies (in addition to or to supplement those referred to in paragraph 7.2 above) which pertain to the subsurface or physical conditions at or contiguous to the site or otherwise may affect the cost, progress, performance or furnishing of the Work as CONTRACTOR considers necessary for the performance or furnishing of the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of paragraph 4.2 of the General Conditions; and no additional examinations, investigations, explorations,

tests, reports, studies or similar information or data are or will be required by CONTRACTOR for such purposes.

- 7.4 CONTRACTOR has reviewed and checked all information and data shown or indicated on the Contract Documents with respect to existing Underground Facilities at or contiguous to the site and assumes responsibility for the accurate location of said Underground Facilities. No additional examinations, information or data in respect to said Underground Facilities are or will be required by CONTRACTOR in order to perform and furnish the Work at the contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of paragraph 4.3 of the General Conditions.
- 7.5 CONTRACTOR has correlated the results of all such observations, examinations, investigations, explorations, tests, reports and studies with the terms and conditions of the Contract Documents.
- 7.6 CONTRACTOR has given CONSULTANT written notice of all conflicts, errors or discrepancies that he has discovered in the Contract Documents and the written resolution thereof by CONSULTANT is acceptable to CONTRACTOR.

ARTICLE 8. CONTRACT DOCUMENTS.

The Contract Documents which comprise the entire agreement between NTEIA and CONTRACTOR concerning the Work consist of the following:

- 8.1 This Agreement (pages 1 to 5, inclusive).
- 8.2 Performance and Payment Bonds, per the Project Manual
- 8.3 Certificates of Insurance per the Project Manual
- 8.4 Notice of Award
- 8.5 The Project Manual including the General Conditions, Supplementary Conditions, and any and all special requirements and/or provisions, specifications, construction standards, and all other sections of the Project Manual except the Bid Documents.
- 8.6 Drawings (Plans), consisting of sheets numbered 1 through 5, inclusive.
- 8.7 Addenda Numbers(s)_____.
- 8.8 CONTRACTOR'S BID (pages ____ through ____, inclusive).
- 8.9 Other documentation submitted by CONTRACTOR prior to Notice of Award (insert name and date of letter or other documentation, if applicable; if none, insert N/A._____)
- 8.10 The following which may be delivered or issued after the Effective Date of the Agreement

and are not attached hereto: All Written Amendments and other documents amending, modifying, or supplementing the Contract Documents pursuant to paragraphs 3.4 and 3.5 of the General Conditions.

There are no Contract Documents other than those listed above in this Article 8. The Contract Documents may only be amended, modified or supplemented as provided in paragraphs 3.4 and 3.5 of the General Conditions. The documents listed in paragraphs 8.2 et. seq. above are not attached to this Agreement but are to be maintained as a matter of record and reference at the office of the CONSULTANT, CONTRACTOR and NTEIA.

ARTICLE 9. MISCELLANEOUS.

- 9.1 Terms used in this Agreement which are defined in Article 1 of the General Conditions will have the meanings indicated in the General Conditions.
- 9.2 No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.
- 9.3 NTEIA and CONTRACTOR each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect of all covenants, agreements and obligations contained in the Contract Documents.

IN WITNESS WHEREOF, NTEIA and CONTRACTOR have signed this Agreement in triplicate. One counterpart each has been delivered to NTEIA, CONTRACTOR, and CONSULTANT. All portions of the Contract Documents have been signed or identified by NTEIA and CONTRACTOR or by CONSULTANT on their behalf.

This Agreement will be effective on _____, 19_____.
(Date to be inserted by NTEIA, not CONTRACTOR.)

CONTRACTOR

Noble Township Environmental
and Improvement Association

(Company Name)

P.O. Box 67
Union Mills, Indiana 46382

BY _____
(Name & Title)

(Board Name)

Address for Giving Notices

BY _____
(Name & Title)

Agent & Address for Service of Process:

ATTEST:

NOTICE TO PROCEED

Date: _____, 19__

To Contractor:

PROJECT: (Insert name of Contract as it appears in the Bid Documents)

You are hereby notified to proceed with the above referenced project and that Contract Time for the above contract will commence to run on _____, 19__. no later than that date, you are to start performing your obligations under the Contract Documents. In accordance with Article 3 of the Agreement (Contract), the dates of Substantial Completion and Final Completion are _____, 19__, and _____, 19__, respectively.

Before you may start any Work at the site, Paragraph 2.7 of the General Conditions provides that you deliver to us certificates of insurance (with a copy sent to the Consultant) per the Contract Documents.

Noble Township Environmental and Improvement Association

(Name and Title)

P.O. Box 67
Union Mills, Indiana 46382

cc: J.F. New & Associates, Inc.
708 Roosevelt Road
Walkerton, Indiana 46574

COMPLETION AFFIDAVIT

IN THE MATTER relating to the Improvement Project and Contract for _____

_____ and the plans and specifications relating thereto comes now _____, who
 being duly sworn upon oath and says he is _____ of _____,
 the corporation to whom was awarded the contract, and who performed the work required under

_____ Improvement Project.

The undersigned is familiar with and personally knows the requirements of the plans and specifications of the improvement project and contract, and further knows that _____
 complied with the terms and conditions of the contract in every particular, and that the material used was of the character, kind, quantity and quality required therein, and that any and all subcontractors, material suppliers, and workmen have received their just compensation, all this according to and under the direction of the _____.

(Owner)

 (Corporation Name)

By _____
 (Principal)

STATE OF INDIANA:

SS:

COUNTY OF LAPORTE

SUBSCRIBED and sworn to before me, this _____ day of _____, 19____.

 (Notary Public)

My Commission Expires:

 (Printed/typed name of Notary)
 Resident of _____ County, IN

SPECIAL PROVISIONS AND INFORMATION

SPECIAL PROVISIONS AND INFORMATION

1. The site of the Sediment Trap and Decanting Basin is owned or leased by the Noble Township Environmental and Improvement Association (NTEIA) and is also administered by NTEIA.
2. The Contractor shall comply with all General Conditions, Special Conditions and Drawings of the Indiana Department of Natural Resources Permit Number PL-14,585 dated August 17, 1992.
3. The Contractor shall comply with all Conditions of the LaPorte County Drainage Board.
4. The Standard Form of Agreement as included in the Project Manual is for guideline purposes only. The actual Agreement between the NTEIA and Contractor shall be issued after negotiation between the apparent successful Bidder and the NTEIA.
5. The Contractor shall ensure that all construction equipment be refueled and maintained at an upland site away from the existing wetlands and Mill Creek. This is to prevent the accidental spilling of petroleum products into the aquatic ecosystem, which could contribute to water quality degradation.
6. The Contractor shall, prior to construction, submit a plan to the NTEIA identifying work preparation and refueling areas. The plan must include measures to be taken for spill prevention and containment, and must be approved by the NTEIA prior to the beginning of work.
7. The Contractor shall submit a plan to the NTEIA outlining erosion control procedures to be utilized during construction.
8. The Contractor shall be responsible for maintaining job-site security.
9. The Contractor shall be responsible for supplying necessary job site utilities.
10. The NTEIA shall provide sufficient construction staking to locate the principal structures and work areas. The contractor shall provide the staking required for day to day operation for construction.
11. The Contractor shall assist the Consultant in placing two (2) permanent bench marks on the site. The cost shall be distributed among other items of the contract.

12. Dike and Baffle cross sections shall be constructed according to the typical cross sections on Sheets 1 through 5 as prepared by J.F. New and Associates.
13. Clearing and grubbing as indicated on the plans shall be limited to areas of excavation and embankment. Disposal areas if required shall be determined by the NTEIA.
14. The cost of clearing shall not be paid for directly but should be included in the cost of excavation.
15. Outlet structure embankment shall be constructed of upland soils. The cost of spillway and outlet structure shaping shall be included in the cost of Excavation for Embankment.
16. Excavated material from sediment traps shall be placed on upland areas on the site, as designated by the NTEIA.
17. The maintenance drive shall be 12 feet wide, 8 inches deep and it is assumed approximately _____ long from the road to the work location.
18. Upon completion of the project, the Contractor shall level and grade decanting basin site and seed to upland vegetation as directed by the NTEIA.
19. Seed mixtures for excavated, graded or other disturbed areas shall be according to the specified mix for embankments and upland areas as described on page 26 of Specifications.
20. The cost of Erosion Control items associated with the excavation of sediment traps for construction erosion shall not be paid for directly but shall be made a part of the cost of Excavation for Embankment.
21. Erosion control blankets shall be S-150 as manufactured by North American Green or an approved equal, and shall be placed as directed by the NTEIA. The quantity listed is an undistributed quantity.
22. The following pages are informational sheets regarding the Indiana Department of Natural Resources Permit and materials manufacturers.

PERMIT NO. PL-14,585STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCESPERMIT OR APPROVAL TO CHANGE THE
SHORELINE OR BED OF A PUBLIC FRESH WATER LAKE

LAKE Mill Pond COUNTY LaPorte TOWNSHIP Noble

ISSUED TO: Noble Township Environmental & Improvement Association, c/o J.F.
New & Associates, 708 Roosevelt Road, Walkerton, Indiana 46574

This permit is issued pursuant to the provisions of Indiana Code 13-2-11.1 for the following described work adjacent to applicant's property:

In accordance with the plans and specifications submitted to and on file with the Division of Water, deepen the lake bed in the areas shown on the attached map by hydraulically dredging to a depth ranging from 1-7 feet below the level of the control structure of the lake. Area No. 1 is to function as a sediment trap and will be completed first. The spoil is to be deposited in the contained upland sites as shown on the attached map (sites A and B).

Approval is granted with the following conditions:

- (1) if, during the project, the sediments underlying the lake confining unit (sands) are exposed, dredging operations should be stopped in that segment of the project;
- (2) the dredging be completed in area No. 1 prior to any other lake bed dredging;

(Continued On Next Page)

Legal description of applicant's property: Pt. SE $\frac{1}{4}$, Section 8, T. 35 N., R. 3 W.

It is understood that:

- 1 This permit is based upon applicant's representation of title and does not authorize any work on any land except land of applicant which adjoins or extends into said lake.
- 2 The present shore line of said lake shall not be disturbed by extending it either lakeward or landward except as so stated in the description of the work as herein approved.
- 3 No material removed from the shore line or bed shall be deposited elsewhere in the lake or upon any public land unless specifically approved, nor shall soil or any other material from any source be deposited on the shore line or in the lake without specific approval.
- 4 This approval is limited to the description and specifications set forth herein and any variation therefrom shall invalidate and render this approval void.
- 5 This permit may be revoked for violation by applicant of any term or condition therein or for violation of any valid rule or regulation of the Department, which may be applicable.
- 6 This permit or approval shall not be assignable or transferable without the written consent of the Department.
- 7 All work authorized hereby shall be completed within ONE (1) YEAR from date of approval.
- 8 The Department shall have the right to enter upon the property of the applicant for the purpose of inspecting the authorized work and conducting surveys.
- 9 This permit does not relieve the permittee of the responsibility of obtaining all other permits, easements or approvals that may be required.
- 10 The receipt and acceptance of this permit by the applicant shall be deemed his acceptance of all terms and conditions therein. It must be signed by the permittee to be valid and must be available at the property described above until the expiration of the permit.

Dated this 17th day of August, 19 92

ACCEPTED:

DEPARTMENT OF NATURAL RESOURCES

BY

Deputy Director

Permittee

- (3) Division of Fish and Wildlife staff (Environmental Biologist) be contacted during the construction period for an on-site inspection;
- (4) all dredging shall take place during the last half of the calendar year;
- (5) the sediment trap (area No. 1) be maintained on an as-needed basis;
- (6) to minimize the disturbance to the pond, the project must be completed in separate phases as per the materials submitted with the permit application; only one phase can be active at any given time; one phase must be completed before the next phase can be initiated;
- (7) bottom material that is resuspended during the removal process must be contained to the immediate project area; if spreading of resuspended sediment occurs, an in-lake silt curtain must be installed;
- (8) treatment of the water that is to be returned to the lake must include adequate detention time and sediment removal measures (i.e., baffles to lengthen the water flow path, passing water through filter fabric, rock rip rap, etc.) to ensure that the water returned to Mill Pond is of similar quality and clarity to the existing water in the pond and is not carrying excessive sediment back into the pond; excessive sediment shall mean total suspended solids concentrations greater than 30 mg/l for a single grab sample of the return water;
- (9) water returned to the pond from the "dewatering" basin must be returned in a manner that does not cause erosion of the shoreline or cause excessive disturbance of the pond's bottom sediments; if water is returned to Mill Pond via overland flow, the water must flow over well-vegetated areas and not be of such a volume or velocity to cause erosion of the watercourse;
- (10) return water must be of such quality not to cause extensive algal blooms to occur in the vicinity of the return water outflow; if extensive algal blooms are found to occur, the return water must be treated (e.g., with aluminum sulfate "alum") to remove excess phosphorus from the water;
- (11) at all times, erosion control measures (e.g., silt fence, erosion control blankets, vegetation establishment) must be used on the dewatering basin levees and on any disturbed areas of the dewatering basin, including any stockpiled topsoil, to control erosion on the site;
- (12) any areas disturbed during the project must be revegetated as soon as possible to prevent erosion and off-site sedimentation to the pond; to enhance the establishment of vegetation, straw mulch or erosion control blankets should be used;
- (13) upon completion of the project, the dredge spoil must be spread and vegetation established on the dredge spoil such that erosion and off-site sedimentation of the dredge spoil is prevented; if the dredge spoil is stockpiled for later use, it must be piled in an upland location away from the pond; silt fence or staked-down straw bales should be placed around any stock-piled dredge spoil to prevent off-site sedimentation;

Permit No. PL-14,585
August 17, 1992
Page Three

- (14) all excavated material be placed landward of the shoreline on the property described above or hauled away from the waters of the lake; no spoil be placed within wetland areas;
- (15) fill placed in areas growing trees be avoided;
- (16) all bare and disturbed areas be suitably protected during construction;
- (17) all disturbed areas landward of the shoreline be suitably revegetated upon completion; and
- (18) except for Condition #5 this permit or approval shall be valid for one (1) year from the date of approval.

The shoreline is defined as that line formed on the bank or shore of Mill Pond by the water surface at its average normal level.

If there is any question as to the location of the shoreline, contact the Division of Water for additional information.



INDIANA DEPARTMENT OF NATURAL RESOURCES

PATRICK R. RALSTON, DIRECTOR

Dear Sir/Madam:

The Lake Preservation Act, IC 13-2-11.1, charges the Department of Natural Resources with the responsibility to regulate all construction in any public freshwater lake in the state. Enclosed is your permit granted by the Department authorizing the alteration or change to the shoreline or bed of a public freshwater lake. Please be aware, all authorized work must be completed within one (1) year from the date of Department approval. Special attention should be given to the conditions under which the approval was granted. This permit should not be construed as a waiver of any local building ordinances or other state and federal laws.

You may appeal any portion of this permit or any of the limitations and conditions which it contains by applying for administrative review. Such review is governed by the provisions of the Administrative Adjudication Act, IC 4-21.5, and by Rule 310 IAC 0.6 Adjudicative Proceedings of the Department of Natural Resources. In order to preserve this right of review, within eighteen (18) days from the mailing of this notice, a written petition must be filed with:

Director, Division of Hearings
Indiana Government Center South
402 West Washington Street, Room W272
Indianapolis, Indiana 46204

The request should contain specific grounds for appeal and indicate the portion(s) of the permit to which it pertains. If an appeal is made, the final agency determination will be made by the Natural Resources Commission following a legal proceeding conducted before an Administrative Law Judge.

In addition to the permit granted by the Department, you may also have to obtain a permit from the U.S. Army Corps of Engineers under Section 404 of the Federal Water Pollution Control Act or Section 10 of the Rivers and Harbors Act. For information on the Corps permit requirements, it is recommended you contact the appropriate district office identified below.

☒ U.S. Army Corps of Engineers
Detroit District Office
P.O. Box 1027
Detroit, Michigan 48231
Telephone (313) 226-2218

☐ U.S. Army Corps of Engineers
Louisville District Office
P.O. Box 59, 600 Federal Plaza
Louisville, Kentucky 40201
Telephone (502) 582-5607

If you have any questions, please contact the Lake Permits Section, Division of Water, telephone (317) 232-5661.

pc: Conservation Officers

"EQUAL OPPORTUNITY EMPLOYER"



PRINTED ON RECYCLED PAPER

Date of Action: August 17, 1992

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER
Indianapolis, Indiana

Application No. PL-14,585

Application Date: August 13, 1991

Received Date: August 13, 1991

Public Notice Date: November 15, 1991

TITLE: DREDGE PORTIONS OF THE LAKE BED ON MILL POND AT UNION MILLS

APPLICANT: Noble Township Environmental and Improvement Association
1216 Hamilton Street
Union Mills, Indiana 46382

AGENT: J.F. New and Associates
708 Roosevelt Road
Walkerton, Indiana 46574

PROJECT DESCRIPTION: In accordance with the plans and specifications submitted to and on file with the Division of Water, deepen the lake bed in the areas shown on the attached map by hydraulically dredging to a depth ranging from 1-7 feet below the level of the control structure of the lake. Area No. 1 is to function as a sediment trap and will be completed first. The spoil is to be deposited in the contained upland sites as shown on the attached map (sites A and B).

PROPERTY DESCRIPTION: SE $\frac{1}{4}$, Section 8
Township 35 North, Range 3 West
LaPorte County
Hanna Quadrangle Map
UTMN = 593250 - 593750, UTME = 518000 - 518475

DESCRIPTION OF LAKE: Mill Pond is located at Union Mills, has a surface area of 24 acres, a maximum depth of 8 feet, and its shoreline is 30% developed. There is no legally established average normal level.

COMMENTS BY THE DIVISIONS: The following review comments have been submitted concerning the above-referenced project:

Division of Water: The purpose of the proposed project is to restore the lake bottom to its original contours by removing accumulated silt, and debris from the lake bed.

Upon initial review of the application, it was determined to be incomplete because the applicant had not provided proof of public notice to all adjoining landowners pursuant to Rule 310 IAC 0.6-3-2. A letter dated September 9, 1991, was sent to the applicant requesting that the missing information/item(s) be provided within 90 days.

A response to this letter was received by the Division of Water on October 15, 1991. Upon review of the received information, it was determined to be incomplete because the applicant had not provided sufficient proof of public notice in the form of certified mail receipts. A second letter dated November 1, 1991, was sent to the applicant requesting that the missing information/item(s) be provided within 90 days. A response to this letter was received by the Division of Water on November 12, 1991.

On March 17, 1992, the application was placed in abeyance per the request of Fish and Wildlife for the lessor of either 90 days or until mitigation could be resolved with the Division of Fish and Wildlife. On April 16, 1992, the applicant met with staff from the Divisions of Fish and Wildlife, Soil Conservation, and Water to discuss the Department's environmental concerns with the proposed project. Comments received from the Divisions of Fish and Wildlife and Soil Conservation on May 18, 1992, indicated that their concerns had been resolved.

At the above meeting, the agent was informed that the Ground Water Section was concerned about the potential puncturing of the confining lake bottom sediments as a result of the proposed project.

On May 19, 1992, a fax was received from the applicant requesting a meeting to discuss the Ground Water Section's concerns pertaining to the proposed project. The meeting was held on June 9, 1992. It was determined from this meeting that additional information would be required for a determination to be made. A letter dated June 15, 1992, was sent to the applicant requesting that results from six core samples be provided within 90 days. A response to this letter was received by the Division of Water on July 9, 1992. This information was forwarded to the Ground Water Section for their review and comment.

General hydrogeologic conditions are as follows:

- Regional ground-water flow is to the southeast (see Plate 1A of the Kankakee River Basin report by IDNR, 1990).
- Best available data around Mill Pond suggest that local ground-water flow around the north and east sides of Mill Pond is towards the pond. Local ground water flow on the west side of Mill Pond is away from the pond. Static water levels for wells in the area of Mill Pond are between 12 and 30 feet below ground surface.
- Wells in the area are between 35 and 60 feet deep, with most wells at 45 feet. All of the wells are producing from a coarse sand aquifer that is typically between 5 and 15 feet thick. No substantial confining clay unit is present at the ground surface (lake bottom).

Although the repercussions of whole lakebed dredging are not entirely understood, upon review of the additional information provided by the applicant, the Ground Water Section recommends approval of the proposed dredging project with one restriction:

- Due to the downward hydraulic gradient present within the project area, it is imperative that the lake bottom remain intact to ensure that the water level of the lake will not be affected. If, during the project, the sediments underlying the lake confining unit (sands) are exposed, dredging operations should be stopped in that segment of the project.

The applicant should be cautioned about extrapolating lake perimeter soil types into and beneath lakes. The assumption is seldom correct.

The installation of a sediment trap has proven to be an effective method for removing significant amounts of sediments being carried in channels and streams; however, its effectiveness diminishes as the trap fills up. Routine cleaning out of the sediment trap will decrease the need for future reconstruction of the lake.

Therefore, the Division of Water recommends approval of the proposed project with the conditions that:

- (1) If, during the project, the sediments underlying the lake confining unit (sands) are exposed, dredging operations should be stopped in that segment of the project.
- (2) The dredging be completed in area No. 1 prior to any other lake bed dredging.
- (3) The applicant be allowed to periodically clean out the sediment trap (area No. 1) to its designed dimensions.

Division of Fish and Wildlife: The project was reviewed by Keith Poole, Wetlands Biologist, on May 15, 1992.

The Division of Fish and Wildlife concurs with the comments from the Division of Soil Conservation. If land treatment practices can be improved it will ensure that the maintenance of the sediment trap upstream of Mill Pond will be reduced as well as Mill Pond itself.

The Division of Fish and Wildlife recommends approval provided that the plans are followed in detail and the following conditions are met:

1. Division of Fish and Wildlife staff (Environmental Biologist) be contacted during the construction period for an on-site inspection.
2. All dredging shall take place during the last half of the calendar year.
3. The sediment trap (area No. 1) be maintained on an as-needed basis.

Division of Forestry: Minimize all tree clearing and allow opportunity to utilize material cleared. Avoid placing fill in areas growing trees. Fill placed over tree rooting areas will likely result in lower tree vigor or even mortality.

Division of Nature Preserves: The Nature Preserve and Natural Heritage Program data base shows that there are no dedicated nature preserves, no known high quality natural areas, and no species of plants or animals that are considered rare, threatened or endangered that will be affected by this project.

Division of Outdoor Recreation: This project will not directly affect any component of Indiana's Natural and Scenic Rivers System. No Land and Water and Water Conservation Fund projects are affected by this action.

Division of Soil Conservation: Mill Pond is a small, man-made waterbody located in LaPorte County, Indiana. The Mill Pond watershed is quite large covering approximately 13,823 acres. Land use in the watershed is largely agricultural which accounts for approximately 92 percent of the watershed. The watershed also contains large areas of quality wetlands that are generally associated with the tributaries draining into Mill Pond.

The Division of Soil Conservation recognizes the recreational and aesthetic importance of Mill Pond to the residents and visitors of Noble Township. The Division also recognizes that these recreational and aesthetic values have been severely impaired due to significant infilling of Mill Pond with sediment and the growth of extensive aquatic plant communities.

The Division of Soil Conservation has reviewed the permit application, visited the site, and toured the watershed to evaluate the proposed project.

A tour of the watershed revealed the presence of quality wetlands, the predominance of agricultural activities, potential animal waste and erosion problems from grazed woodlots, and a general need for additional soil and water conservation measures on the agricultural land in the watershed.

The Division of Soil Conservation recognizes the size of the watershed relative to the size of Mill Pond puts the pond at a severe disadvantage for maintaining high water quality, regardless of the condition of the watershed. However, the Division feels strongly that before a dredging project is attempted, efforts should be made to control the sources of the sediment. The Division of Soil Conservation feels that the benefits of any sediment removal project will likely be short-lived unless the sources of the sediment in the watershed are controlled. Thus, the Division of Soil Conservation strongly encourages the Noble Township Environmental and Improvement Association to contact the LaPorte County Soil and Water Conservation District (1714 A Street, LaPorte, ph. 362-6633) to begin working toward controlling sediment at its source in the watershed. Control of sediment at its source will not only reduce the sediment loading to Mill Pond and extend the benefits of the sediment removal project, but also will reduce sediment loading to the wetlands in the watershed and maintain the effectiveness of the wetlands in protecting the quality of Mill Pond.

Although the proposed project will not address sediment sources, some nutrient reduction will likely be achieved as a majority of the nutrient-rich bottom sediments will be removed from Mill Pond. This will reduce the recycling of bottom nutrients in this shallow, unstratified waterbody and may result in an improvement in water quality in the years following the completion of the dredging project.

The Division of Soil Conservation will require the following conditions to be met as part of permit issuance:

- 1) To minimize the disturbance to the pond, the project must be completed in separate phases as per the materials submitted with the permit application. Only one phase can be active at any given time. One phase must be completed before the next phase can be initiated.
- 2) Bottom material that is resuspended during the removal process must be contained to the immediate project area. If spreading of resuspended sediment occurs, an in-lake silt curtain must be installed.
- 3) Treatment of the water that is to be returned to the lake must include adequate detention time and sediment removal measures (i.e., baffles to lengthen the water flow path, passing water through filter fabric, rock rip rap, etc.) to ensure that the water returned to Mill Pond is of similar quality and clarity to the existing water in the pond and is not carrying excessive sediment back into the pond. Excessive sediment shall mean total suspended solids concentrations greater than 30 mg/l for a single grab sample of the return water.
- 4) Water returned to the pond from the "dewatering" basin must be returned in a manner that does not cause erosion of the shoreline or cause excessive disturbance of the pond's bottom sediments. If water is returned to Mill Pond via overland flow, the water must flow over well-vegetated areas and not be of such a volume or velocity to cause erosion of the watercourse.
- 5) Return water must be of such quality not to cause extensive algal blooms to occur in the vicinity of the return water outflow. If extensive algal blooms are found to occur, the return water must be treated (e.g., with aluminum sulfate "alum") to remove excess phosphorus from the water.
- 6) At all times, erosion control measures (e.g., silt fence, erosion control blankets, vegetation establishment) must be used on the dewatering basin levees and on any disturbed areas of the dewatering basin, including any stockpiled topsoil, to control erosion on the site.
- 7) Any areas disturbed during the project must be revegetated as soon as possible to prevent erosion and off-site sedimentation to the pond. To enhance the establishment of vegetation, straw mulch or erosion control blankets should be used.
- 8) Upon completion of the project, the dredge spoil must be spread and vegetation established on the dredge spoil such that erosion and off-site sedimentation of the dredge spoil is prevented. If the dredge spoil is stockpiled for later use, it must be piled in an upland location away from the pond. Silt fence or staked-down straw bales should be placed around any stock-piled dredge spoil to prevent off-site sedimentation.

CONCLUSIONS:

The proposed project, with the conditions as specified in the RECOMMENDATION, should not have an adverse effect on the waters of the lake.

D. Scott McClarney
D. Scott McClarney
Lake Inspector

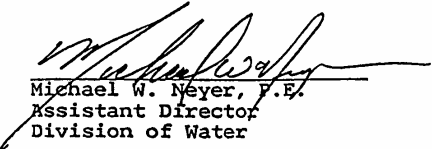
Brian E. Balsley
Brian E. Balsley
Head, Lake Permits Section

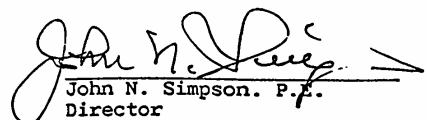
RECOMMENDATION:

It is recommended that the application be approved with the conditions that:

- (1) if, during the project, the sediments underlying the lake confining unit (sands) are exposed, dredging operations should be stopped in that segment of the project;
- (2) the dredging be completed in area No. 1 prior to any other lake bed dredging;
- (3) Division of Fish and Wildlife staff (Environmental Biologist) be contacted during the construction period for an on-site inspection;
- (4) all dredging shall take place during the last half of the calendar year;
- (5) the sediment trap (area No. 1) be maintained on an as-needed basis;
- (6) to minimize the disturbance to the pond, the project must be completed in separate phases as per the materials submitted with the permit application; only one phase can be active at any given time; one phase must be completed before the next phase can be initiated;
- (7) bottom material that is resuspended during the removal process must be contained to the immediate project area; if spreading of resuspended sediment occurs, an in-lake silt curtain must be installed;
- (8) treatment of the water that is to be returned to the lake must include adequate detention time and sediment removal measures (i.e., baffles to lengthen the water flow path, passing water through filter fabric, rock rip rap, etc.) to ensure that the water returned to Mill Pond is of similar quality and clarity to the existing water in the pond and is not carrying excessive sediment back into the pond; excessive sediment shall mean total suspended solids concentrations greater than 30 mg/l for a single grab sample of the return water;
- (9) water returned to the pond from the "dewatering" basin must be returned in a manner that does not cause erosion of the shoreline or cause excessive disturbance of the pond's bottom sediments; if water is returned to Mill Pond via overland flow, the water must flow over well-vegetated areas and not be of such a volume or velocity to cause erosion of the watercourse;

- (10) return water must be of such quality not to cause extensive algal blooms to occur in the vicinity of the return water outflow; if extensive algal blooms are found to occur, the return water must be treated (e.g., with aluminum sulfate "alum") to remove excess phosphorus from the water;
- (11) at all times, erosion control measures (e.g., silt fence, erosion control blankets, vegetation establishment) must be used on the dewatering basin levees and on any disturbed areas of the dewatering basin, including any stockpiled topsoil, to control erosion on the site;
- (12) any areas disturbed during the project must be revegetated as soon as possible to prevent erosion and off-site sedimentation to the pond; to enhance the establishment of vegetation, straw mulch or erosion control blankets should be used;
- (13) upon completion of the project, the dredge spoil must be spread and vegetation established on the dredge spoil such that erosion and off-site sedimentation of the dredge spoil is prevented; if the dredge spoil is stockpiled for later use, it must be piled in an upland location away from the pond; silt fence or staked-down straw bales should be placed around any stock-piled dredge spoil to prevent off-site sedimentation;
- (14) all excavated material be placed landward of the shoreline on the property described above or hauled away from the waters of the lake; no spoil be placed within wetland areas;
- (15) fill placed in areas growing trees be avoided;
- (16) all bare and disturbed areas be suitably protected during construction;
- (17) all disturbed areas landward of the shoreline be suitably revegetated upon completion; and
- (18) except for Condition #5 this permit or approval shall be valid for one (1) year from the date of approval.


Michael W. Neyer, P.E.
Assistant Director
Division of Water


John N. Simpson, P.E.
Director
Division of Water

200

-002
9.0

14-08-20-00E

PT. 9.0

PT. 004

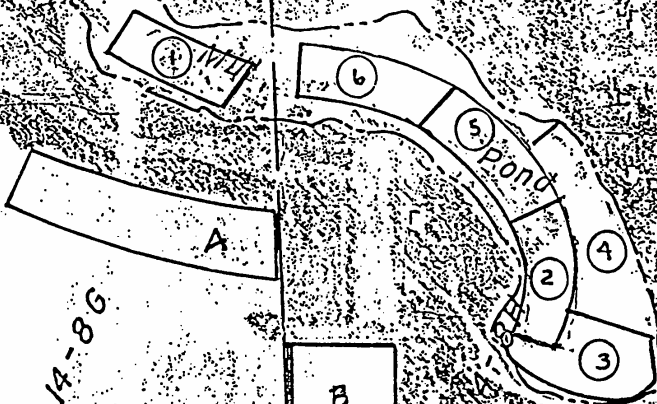
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PT. 34.304

R.R.

AL



A
N

SCALE:
1"=4'

300S

Co:
TH

587

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PT. 9.0

PT
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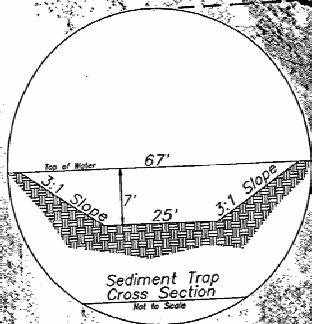
867

210'

300'

150'

MILL



8.6

Scale 1" = 200'



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Associates, Inc.

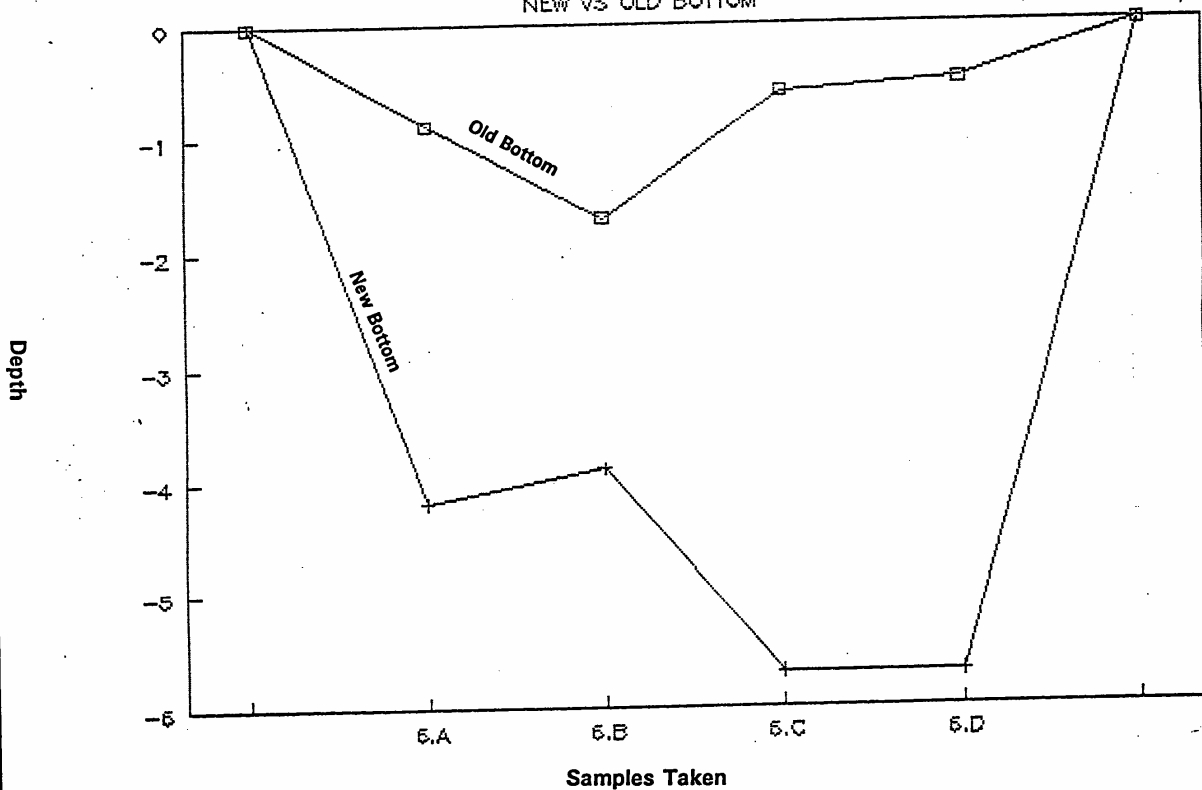
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Fax 214-584-3448

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Sediment Trap Location

MILL POND SEDIMENT DATA

NEW VS OLD BOTTOM



Terrain Cross Section at Sediment Trap Location

Sheet 2 of 5



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Fax: 908-528-3108



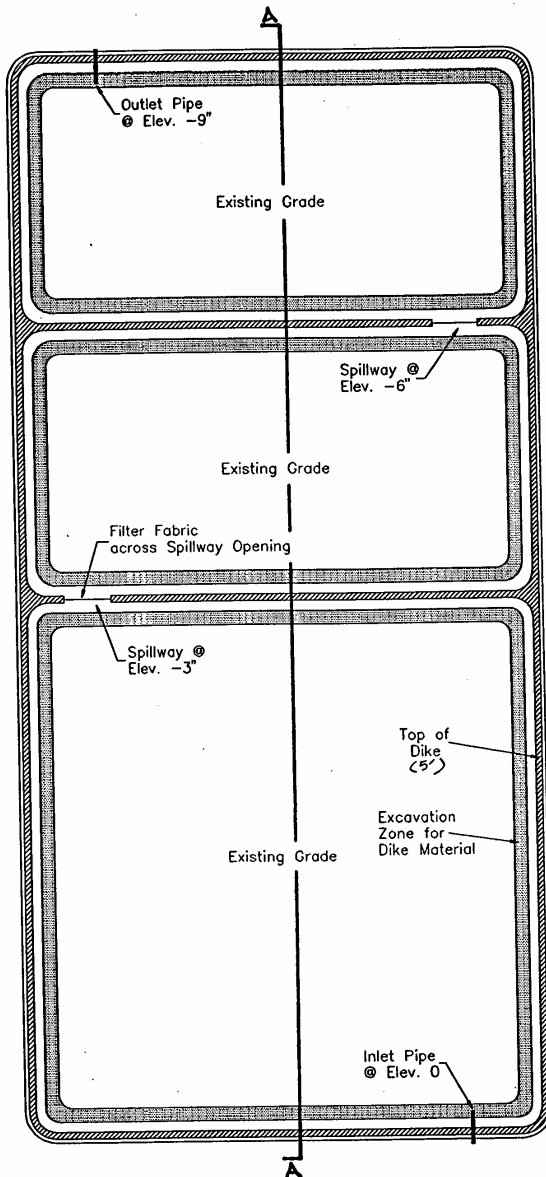
Decanting Basin Location



**J.F. New &
Associates, Inc.**

704 Research Road
P.O. Box 243
Watertown, NJ 08578
Phone: 212-262-3400
Fax: 212-262-3448

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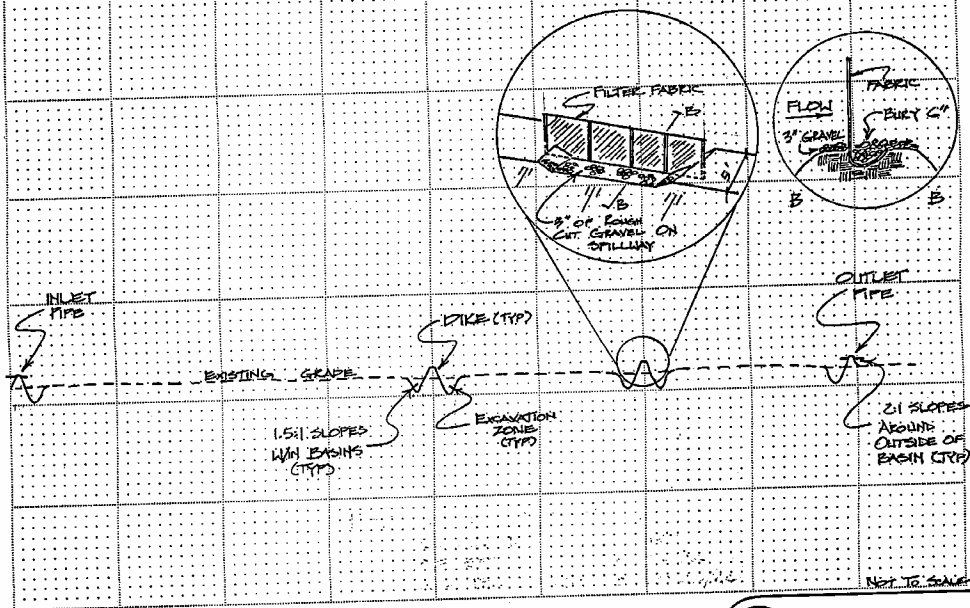
1/4" = 1' SCALE

Decanting Basin Detail



708 Roosevelt Road
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Watertown, NJ 08574
Phone: 215-385-3400
FAX: 215-385-3448

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Decanting Basin Cross Section A-A

Sheet 5 of 5

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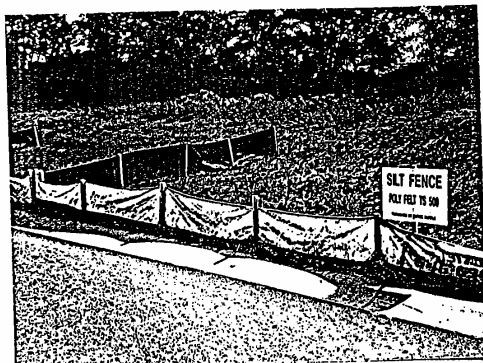
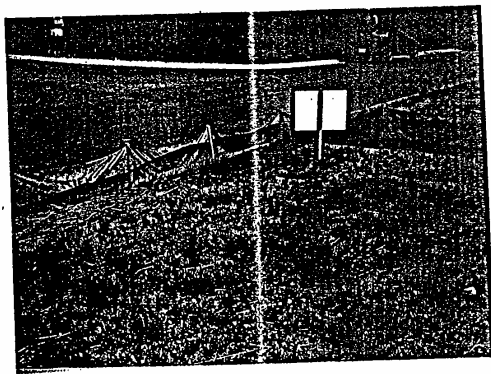
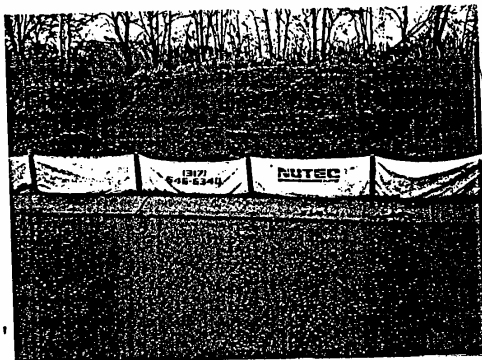
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NUTEC SILT FENCE

Sediment loading CAN be controlled in creeks, streams, lakes, roadways and storm sewer inlets. Nutec silt fence slows overland flow velocities and retains soil particles, while allowing water to flow through the fabric.

Nutec uses a combination of quality hardwood stakes and laths in conjunction with the most effective filter fabric available. Our fabric is a highly UV-stabilized, continuous filament, polypropylene, non-woven, needle-punched geotextile. Compared to woven fabrics, our fabric has superior filterability and flow characteristics.

Although we have the ability to manufacture any style of silt fence, Nutec commonly manufactures 3' and 4' fence with stakes 5' on center. We also have the ability to add a reinforced geogrid backing.



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6439 EAST 30TH ST. • INDIANAPOLIS, IN • 46219 • (317) 546-6340 • FAX (317) 546-6344

3NW SILT FENCE

silt fence shall consist of three (3) parts:

1. 36" wide geotextile fabric shall be a non-woven, continuous filament, needle-punched filter fabric machine produced from 100% polypropylene. Fabric should be designed specifically to retain sediment and remain highly permeable to water. Desired characteristics include small pore size, high U.V. resistance high permittivity, and a high percent open area.
2. Stakes shall be 2" x 2" x 36" hardwood sharpened to a point on one end. Stakes shall be placed 5' on center.
3. Wood laths 1/2" x 1-1/2" x 24" for attaching the geotextile to the stakes.

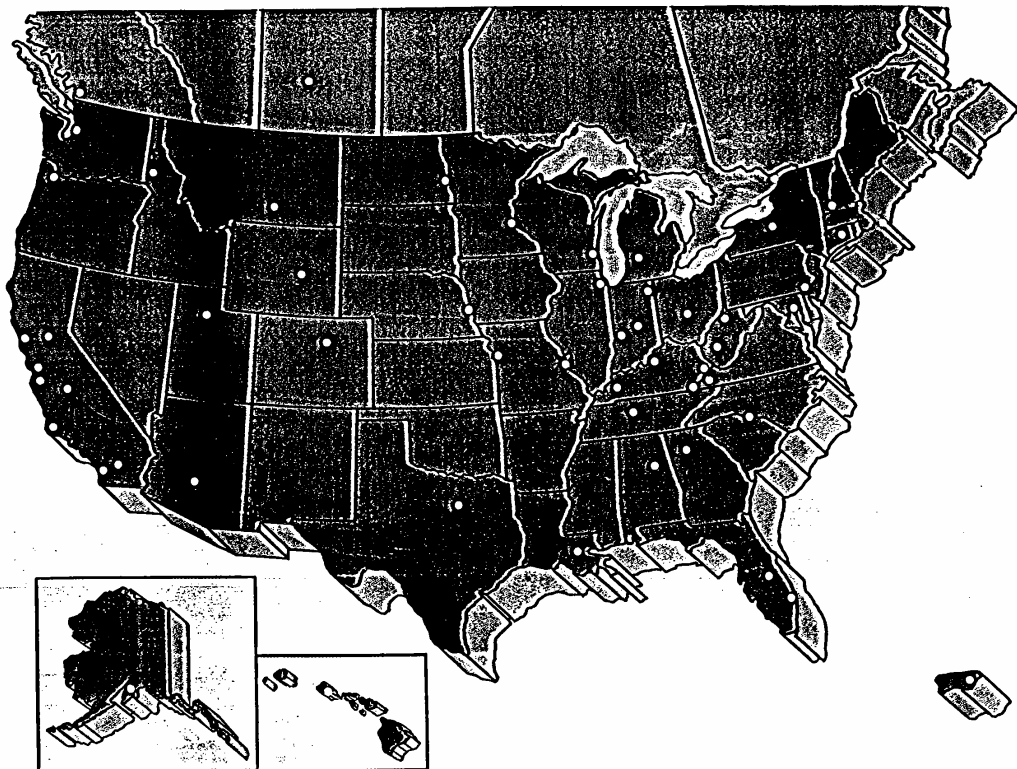
ASSEMBLY: Geotextile shall be attached to wood stakes with wood laths and staples or nails. Bottom 12" of fabric shall be left unsecured to allow for entrenchment. 3NW Silt Fence shall be manufactured by Nutec Supply or engineer approved equivalent.

GEOTEXTILE: Fabric should meet or exceed the following physical, mechanical, and hydraulic specifications.

Structure	non-woven
Polymer	Polypropylene
Weight	4.5 oz/Sq.yard
Non-Woven Porosity	> 85%
AOS (U.S. Sieve)	80-40
Permittivity	2.7
Mullen Burst	160 Psi
Trap Tear Strength	50 Lbs.
Grab Tensile/Elongation	110 Lbs/50 %
Slurry Flow Rate	210 Gal./Min./Sq.Ft.
Sediment Retention	> 75%
U.V. Resistance	> 70%

3NW PHYSICAL SPECIFICATIONS

Length	50 Feet/Roll
Height	36 Inches
Weight	27 Lbs/Roll



A nationwide network of distributors specializing in erosion control is supported by the NORTH AMERICAN GREEN Technical sales and research groups. Through this team effort, innovative recommendations are provided to the industry we serve.

NORTH AMERICAN GREEN blankets and technical support are the standard of performance by which other erosion control materials and methods are measured.

For the specialized distributor nearest you, contact NORTH AMERICAN GREEN.



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member
International Erosion
Control Association

Erosion Control Blankets

S75

- 6 The S75 is designed for 4:1 slopes and moderate runoff conditions. It is made of 100% wheat straw with light weight, long lasting photodegradable netting on one side only. The blanket is sewn together with cotton thread. The S75 blanket is totally degradable.



S75 Specifications

For use on Moderate Slopes

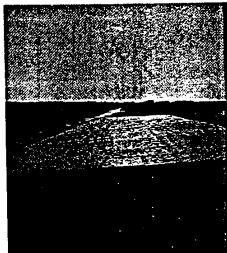
MATERIAL CONTENT:

Straw 100% 50 lb/
sq. yd.

Netting
(light wt.) (1) side only
(long lasting)
Thread Biodegrad-
able cotton

PHYSICAL SPECS:

Width 6.5 ft.
Length 83.5 ft.
Weight 30 lbs.
Area 60 sq. yd.



Installation on 4:1 or less slope
with minimal runoff

S150

Made of 100% biodegradable straw, S150 has added strength of light weight, long lasting photodegradable netting on both sides. Like the S75, it is sewn together with cotton thread. It is recommended for 3:1 slopes and medium runoff conditions.



S150 Specifications

For use on Moderate to Heavy Slopes

MATERIAL CONTENT:

Straw 100% 50 lb/
sq. yd.

Netting
(light wt.) Both sides
(long lasting)
Thread Biodegrad-
able cotton

PHYSICAL SPECS:

Width 6.5 ft.
Length 83.5 ft.
Weight 30 lbs.
Area 60 sq. yd.

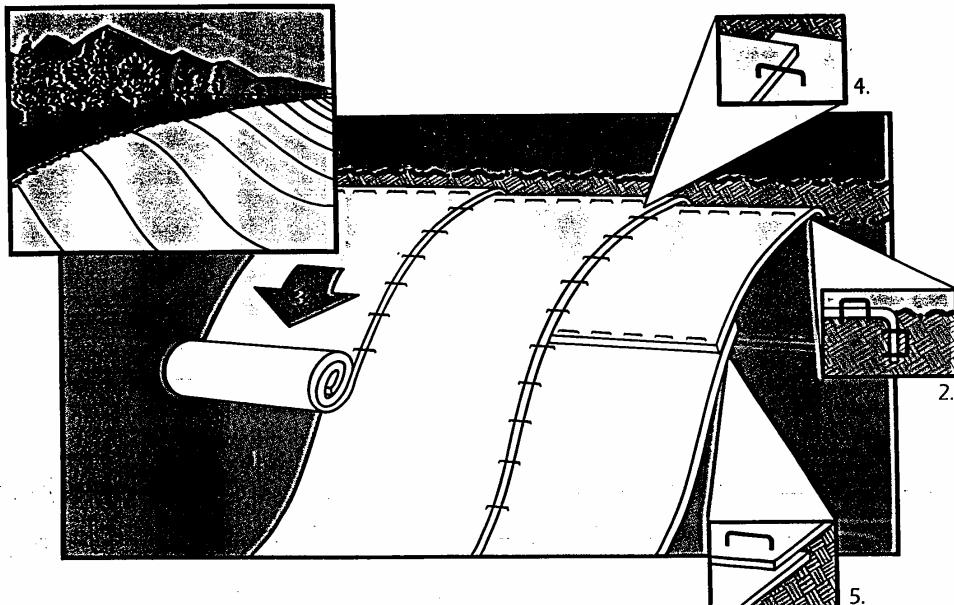


Slope stabilization 3:1
medium to heavy runoff

Installation Guide

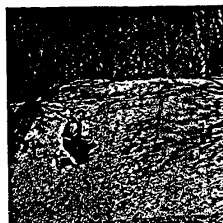
Slopes

16



1. Prepare soil before installing blankets, including application of lime, fertilizer and seed. NOTE: When using SCC225, do not seed prepared area. SCC225 must be installed with paper side down.
2. Begin at the top of the slope by anchoring the blanket in a 6" deep x 6" wide trench. Backfill and compact the trench after stapling.
3. Roll the blankets down the slope in the direction of the water flow.
4. The edges of parallel blankets must be stapled with approximately 2" overlap.
5. When blankets must be spliced down the slope, place blankets end over end (shingle style) with approximately 6" overlap. Staple through overlapped area. Approximately 12" apart.

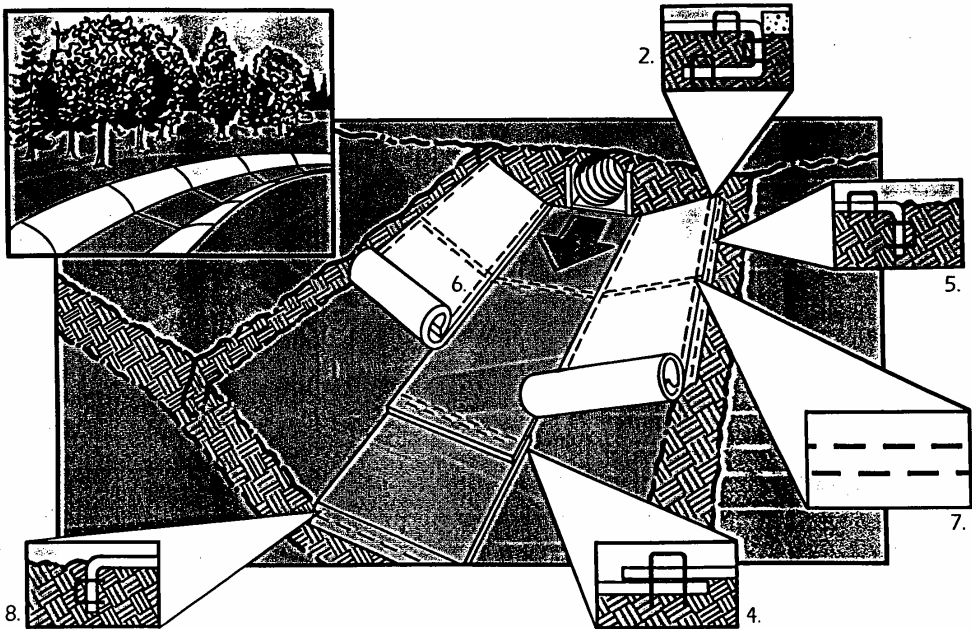
REFER TO GENERAL STAPLE PATTERN GUIDE ON PAGE 15 FOR CORRECT STAPLE PATTERN RECOMMENDATIONS FOR SLOPE INSTALLATIONS.



Installation Guide

Channels

17



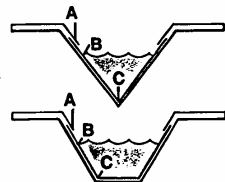
1. Prepare soil before installing blankets, including application of lime, fertilizer and seed.
2. Begin at the top of the channel by anchoring the blanket in a 6" deep x 6" wide trench. Backfill and compact the trench after stapling.
3. Roll center blanket in direction of water flow on bottom of channel.
4. Place blankets end over end (shingle style) with a 6" overlap. Use a double row of staggered staples 4" apart to secure blankets.
5. Full length edge of blankets at top of side slopes must be anchored in 6" deep x 6" wide trench. Backfill and compact the trench after stapling.
6. Blankets on side slopes must be overlapped 4" over the center blanket and stapled.
7. In medium/high flow channel applications, a staple check slot is recommended at 30 to 40 foot intervals. Use a row of staples 4" apart over the entire

width of the channel. Place a second row 4" below the first row in a staggered pattern.

8. The terminal end of the blankets must be anchored in a 6" deep x 6" wide trench. Backfill and compact the trench after stapling.

Critical Points

- A. Overlaps and seams
- B. Projected water line
- C. Channel bottom / side slope vertices.



NOTE: Horizontal staple spacing should be altered if necessary to allow staples to secure the critical points along the channel surface.

REFER TO GENERAL STAPLE PATTERN GUIDE ON PAGE 15 FOR CORRECT STAPLE PATTERN RECOMMENDATIONS FOR CHANNELS.

**STANDARD GENERAL CONDITIONS
OF THE
CONSTRUCTION CONTRACT**

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by
Engineers Joint Contract Documents Committee
and
Issued and Published Jointly By



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A practice division of the
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These General Conditions have been prepared for use with the Owner-Contractor Agreements (No. 1910-8-A-1 or 1910-8-A-2, 1983 editions). Their provisions are interrelated and a change in one may necessitate a change in the others. Comments concerning their usage are contained in the Commentary on Agreements for Engineering Services and Contract Documents, No. 1910-9, 1981 edition. For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (No. 1910-17, 1983 edition). When bidding is involved, the Standard Form of Instructions to Bidders (No. 1910-12, 1983 edition) may be used.

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GENERAL CONDITIONS

ARTICLE I—DEFINITIONS

Wherever used in these General Conditions or in the other Contract Documents the following terms have the meanings indicated which are applicable to both the singular and plural thereof:

Addenda—Written or graphic instruments issued prior to the opening of Bids which clarify, correct or change the bidding documents or the Contract Documents.

Agreement—The written agreement between OWNER and CONTRACTOR covering the Work to be performed; other Contract Documents are attached to the Agreement and made a part thereof as provided therein.

Application for Payment—The form accepted by ENGINEER which is to be used by CONTRACTOR in requesting progress or final payments and which is to include such supporting documentation as is required by the Contract Documents.

Bid—The offer or proposal of the bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

Bonds—Bid, performance and payment bonds and other instruments of security.

Change Order—A document recommended by ENGINEER, which is signed by CONTRACTOR and OWNER and authorizes an addition, deletion or revision in the Work, or an adjustment in the Contract Price or the Contract Time, issued on or after the Effective Date of the Agreement.

Contract Documents—The Agreement, Addenda (which pertain to the Contract Documents), CONTRACTOR'S Bid (including documentation accompanying the Bid and any post-Bid documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Bonds, these General Conditions, the Supplementary Conditions, the Specifications and the Drawings as the same are more specifically identified in the Agreement, together with all amendments, modifications and supplements issued pursuant to paragraphs 3.4 and 3.5 on or after the Effective Date of the Agreement.

Contract Price—The moneys payable by OWNER to CONTRACTOR under the Contract Documents as stated in the Agreement (subject to the provisions of paragraph 11.9.1 in the case of Unit Price Work).

Contract Time—The number of days (computed as provided in paragraph 17.2) or the date stated in the Agreement for the completion of the Work.

CONTRACTOR—The person, firm or corporation with whom OWNER has entered into the Agreement.

defective—An adjective which when modifying the word Work refers to Work that is unsatisfactory, faulty or deficient, or does not conform to the Contract Documents, or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents, or has been damaged prior to ENGINEER's recommendation of final payment (unless responsibility for the protection thereof has been assumed by OWNER at Substantial Completion in accordance with paragraph 14.8 or 14.10).

Drawings—The drawings which show the character and scope of the Work to be performed and which have been prepared or approved by ENGINEER and are referred to in the Contract Documents.

Effective Date of the Agreement—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

ENGINEER—The person, firm or corporation named as such in the Agreement.

Field Order—A written order issued by ENGINEER which orders minor changes in the Work in accordance with paragraph 9.5 but which does not involve a change in the Contract Price or the Contract Time.

General Requirements—Sections of Division I of the Specifications.

Laws and Regulations; Laws or Regulations—Laws, rules, regulations, ordinances, codes and/or orders.

Notice of Award—The written notice by OWNER to the apparent successful bidder stating that upon compliance by the apparent successful bidder with the conditions precedent enumerated therein, within the time specified, OWNER will sign and deliver the Agreement.

Notice to Proceed—A written notice given by OWNER to CONTRACTOR (with a copy to ENGINEER) fixing the date on which the Contract Time will commence to run and on which CONTRACTOR shall start to perform CONTRACTOR'S obligations under the Contract Documents.

OWNER—The public body or authority, corporation, association, firm or person with whom CONTRACTOR has entered into the Agreement and for whom the Work is to be provided.

Partial Utilization—Placing a portion of the Work in service for the purpose for which it is intended (or a related purpose) before reaching Substantial Completion for all the Work.

Project—The total construction of which the Work to be provided under the Contract Documents may be the whole, or a part as indicated elsewhere in the Contract Documents.

Resident Project Representative—The authorized representative of ENGINEER who is assigned to the site or any part thereof.

Shop Drawings—All drawings, diagrams, illustrations, schedules and other data which are specifically prepared by or for CONTRACTOR to illustrate some portion of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a Supplier and submitted by CONTRACTOR to illustrate material or equipment for some portion of the Work.

Specifications—Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work and certain administrative details applicable thereto.

Subcontractor—An individual, firm or corporation having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the Work at the site.

Substantial Completion—The Work (or a specified part thereof) has progressed to the point where, in the opinion of ENGINEER as evidenced by ENGINEER's definitive certificate of Substantial Completion, it is sufficiently complete, in accordance with the Contract Documents, so that the Work (or specified part) can be utilized for the purposes for which it is intended; or if there be no such certificate issued, when final payment is due in accordance with paragraph 14.13. The terms "substantially complete" and "substantially completed" as applied to any Work refer to Substantial Completion thereof.

Supplementary Conditions—The part of the Contract Documents which amends or supplements these General Conditions.

Supplier—A manufacturer, fabricator, supplier, distributor, materialman or vendor.

Underground Facilities—All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such facilities or attachments, and any encasements containing such facilities which have been installed underground to furnish any of the following services or materials: electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, sewage and drainage removal, traffic or other control systems or water.

Unit Price Work—Work to be paid for on the basis of unit prices.

Work—The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work is the result of performing services, furnishing labor and furnishing and incorporating materials and equipment into the construction, all as required by the Contract Documents.

Work Directive Change—A written directive to CONTRACTOR, issued on or after the Effective Date of the Agreement and signed by OWNER and recommended by ENGINEER,

ordering an addition, deletion or revision in the Work, or responding to differing or unforeseen physical conditions under which the Work is to be performed as provided in paragraph 4.2 or 4.3 or to emergencies under paragraph 6.22. A Work Directive Change may not change the Contract Price or the Contract Time, but is evidence that the parties expect that the change directed or documented by a Work Directive Change will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Time as provided in paragraph 10.2.

Written Amendment—A written amendment of the Contract Documents, signed by OWNER and CONTRACTOR on or after the Effective Date of the Agreement and normally dealing with the nonengineering or nontechnical rather than strictly Work-related aspects of the Contract Documents.

ARTICLE 2—PRELIMINARY MATTERS

Delivery of Bonds:

2.1. When CONTRACTOR delivers the executed Agreements to OWNER, CONTRACTOR shall also deliver to OWNER such Bonds as CONTRACTOR may be required to furnish in accordance with paragraph 5.1.

Copies of Documents:

2.2. OWNER shall furnish to CONTRACTOR up to ten copies (unless otherwise specified in the Supplementary Conditions) of the Contract Documents as are reasonably necessary for the execution of the Work. Additional copies will be furnished, upon request, at the cost of reproduction.

Commencement of Contract Time; Notice to Proceed:

2.3. The Contract Time will commence to run on the thirtieth day after the Effective Date of the Agreement, or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within thirty days after the Effective Date of the Agreement. In no event will the Contract Time commence to run later than the seventy-fifth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

Starting the Project:

2.4. CONTRACTOR shall start to perform the Work on the date when the Contract Time commences to run, but no Work shall be done at the site prior to the date on which the Contract Time commences to run.

Before Starting Construction:

2.5. Before undertaking each part of the Work, CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures shown

thereon and all applicable field measurements. CONTRACTOR shall promptly report in writing to ENGINEER any conflict, error or discrepancy which CONTRACTOR may discover and shall obtain a written interpretation or clarification from ENGINEER before proceeding with any Work affected thereby; however, CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error or discrepancy in the Contract Documents, unless CONTRACTOR had actual knowledge thereof or should reasonably have known thereof.

2.6. Within ten days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), CONTRACTOR shall submit to ENGINEER for review:

2.6.1. an estimated progress schedule indicating the starting and completion dates of the various stages of the Work;

2.6.2. a preliminary schedule of Shop Drawing submissions; and

2.6.3. a preliminary schedule of values for all of the Work which will include quantities and prices of items aggregating the Contract Price and will subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work which will be confirmed in writing by CONTRACTOR at the time of submission.

2.7. Before any Work at the site is started, CONTRACTOR shall deliver to OWNER, with a copy to ENGINEER, certificates (and other evidence of insurance requested by OWNER) which CONTRACTOR is required to purchase and maintain in accordance with paragraphs 5.3 and 5.4, and OWNER shall deliver to CONTRACTOR certificates (and other evidence of insurance requested by CONTRACTOR) which OWNER is required to purchase and maintain in accordance with paragraphs 5.6 and 5.7.

Preconstruction Conference:

2.8. Within twenty days after the Effective Date of the Agreement, but before CONTRACTOR starts the Work at the site, a conference attended by CONTRACTOR, ENGINEER and others as appropriate will be held to discuss the schedules referred to in paragraph 2.6, to discuss procedures for handling Shop Drawings and other submittals and for processing Applications for Payment, and to establish a working understanding among the parties as to the Work.

Finalizing Schedules:

2.9. At least ten days before submission of the first Application for Payment a conference attended by CONTRACTOR, ENGINEER and others as appropriate will be held to finalize the schedules submitted in accordance with para-

graph 2.6. The finalized progress schedule will be acceptable to ENGINEER as providing an orderly progression of the Work to completion within the Contract Time, but such acceptance will neither impose on ENGINEER responsibility for the progress or scheduling of the Work nor relieve CONTRACTOR from full responsibility therefor. The finalized schedule of Shop Drawing submissions will be acceptable to ENGINEER as providing a workable arrangement for processing the submissions. The finalized schedule of values will be acceptable to ENGINEER as to form and substance.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

Intent:

3.1. The Contract Documents comprise the entire agreement between OWNER and CONTRACTOR concerning the Work. The Contract Documents are complementary; what is called for by one is as binding as if called for by all. The Contract Documents will be construed in accordance with the law of the place of the Project.

3.2. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any Work, materials or equipment that may reasonably be inferred from the Contract Documents as being required to produce the intended result will be supplied whether or not specifically called for. When words which have a well-known technical or trade meaning are used to describe Work, materials or equipment such words shall be interpreted in accordance with that meaning. Reference to standard specifications, manuals or codes of any technical society, organization or association, or to the Laws or Regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual, code or Laws or Regulations in effect at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated. However, no provision of any referenced standard specification, manual or code (whether or not specifically incorporated by reference in the Contract Documents) shall be effective to change the duties and responsibilities of OWNER, CONTRACTOR or ENGINEER, or any of their consultants, agents or employees from those set forth in the Contract Documents, nor shall it be effective to assign to ENGINEER, or any of ENGINEER's consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.15 or 9.16. Clarifications and interpretations of the Contract Documents shall be issued by ENGINEER as provided in paragraph 9.4.

3.3. If, during the performance of the Work, CONTRACTOR finds a conflict, error or discrepancy in the Contract Documents, CONTRACTOR shall so report to ENGINEER in writing at once and before proceeding with the Work affected thereby shall obtain a written interpretation or clarification

from ENGINEER; however, CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error or discrepancy in the Contract Documents unless CONTRACTOR had actual knowledge thereof or should reasonably have known thereof.

Amending and Supplementing Contract Documents:

3.4. The Contract Documents may be amended to provide for additions, deletions and revisions in the Work or to modify the terms and conditions thereof in one or more of the following ways:

3.4.1. a formal Written Amendment,

3.4.2. a Change Order (pursuant to paragraph 10.4), or

3.4.3. a Work Directive Change (pursuant to paragraph 10.1).

As indicated in paragraphs 11.2 and 12.1, Contract Price and Contract Time may only be changed by a Change Order or a Written Amendment.

3.5. In addition, the requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, in one or more of the following ways:

3.5.1. a Field Order (pursuant to paragraph 9.5),

3.5.2. ENGINEER's approval of a Shop Drawing or sample (pursuant to paragraphs 6.26 and 6.27), or

3.5.3. ENGINEER's written interpretation or clarification (pursuant to paragraph 9.4).

Reuse of Documents:

3.6. Neither CONTRACTOR nor any Subcontractor or Supplier or other person or organization performing or furnishing any of the Work under a direct or indirect contract with OWNER shall have or acquire any title to or ownership rights in any of the Drawings, Specifications or other documents (or copies of any thereof) prepared by or bearing the seal of ENGINEER; and they shall not reuse any of them on extensions of the Project or any other project without written consent of OWNER and ENGINEER and specific written verification or adaptation by ENGINEER.

ARTICLE 4—AVAILABILITY OF LANDS; PHYSICAL CONDITIONS; REFERENCE POINTS

Availability of Lands:

4.1. OWNER shall furnish, as indicated in the Contract Documents, the lands upon which the Work is to be performed, rights-of-way and easements for access thereto, and

such other lands which are designated for the use of CONTRACTOR. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by OWNER, unless otherwise provided in the Contract Documents. If CONTRACTOR believes that any delay in OWNER's furnishing these lands, rights-of-way or easements entitles CONTRACTOR to an extension of the Contract Time, CONTRACTOR may make a claim therefor as provided in Article 12. CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

Physical Conditions:

4.2.1. *Explorations and Reports:* Reference is made to the Supplementary Conditions for identification of those reports of explorations and tests of subsurface conditions at the site that have been utilized by ENGINEER in preparation of the Contract Documents. CONTRACTOR may rely upon the accuracy of the technical data contained in such reports, but not upon nontechnical data, interpretations or opinions contained therein or for the completeness thereof for CONTRACTOR's purposes. Except as indicated in the immediately preceding sentence and in paragraph 4.2.6, CONTRACTOR shall have full responsibility with respect to subsurface conditions at the site.

4.2.2. *Existing Structures:* Reference is made to the Supplementary Conditions for identification of those drawings of physical conditions in or relating to existing surface and subsurface structures (except Underground Facilities referred to in paragraph 4.3) which are at or contiguous to the site that have been utilized by ENGINEER in preparation of the Contract Documents. CONTRACTOR may rely upon the accuracy of the technical data contained in such drawings, but not for the completeness thereof for CONTRACTOR's purposes. Except as indicated in the immediately preceding sentence and in paragraph 4.2.6, CONTRACTOR shall have full responsibility with respect to physical conditions in or relating to such structures.

4.2.3. *Report of Differing Conditions:* If CONTRACTOR believes that:

4.2.3.1. any technical data on which CONTRACTOR is entitled to rely as provided in paragraphs 4.2.1 and 4.2.2 is inaccurate, or

4.2.3.2. any physical condition uncovered or revealed at the site differs materially from that indicated, reflected or referred to in the Contract Documents,

CONTRACTOR shall, promptly after becoming aware thereof and before performing any Work in connection therewith (except in an emergency as permitted by paragraph 6.22), notify OWNER and ENGINEER in writing about the inaccuracy or difference.

4.2.4. **ENGINEER's Review:** ENGINEER will promptly review the pertinent conditions, determine the necessity of obtaining additional explorations or tests with respect thereto and advise OWNER in writing (with a copy to CONTRACTOR) of ENGINEER's findings and conclusions.

4.2.5. **Possible Document Change:** If ENGINEER concludes that there is a material error in the Contract Documents or that because of newly discovered conditions a change in the Contract Documents is required, a Work Directive Change or a Change Order will be issued as provided in Article 10 to reflect and document the consequences of the inaccuracy or difference.

4.2.6. **Possible Price and Time Adjustments:** In each such case, an increase or decrease in the Contract Price or an extension or shortening of the Contract Time, or any combination thereof, will be allowable to the extent that they are attributable to any such inaccuracy or difference. If OWNER and CONTRACTOR are unable to agree as to the amount or length thereof, a claim may be made therefor as provided in Articles 11 and 12.

Physical Conditions—Underground Facilities:

4.3.1. **Shown or Indicated:** The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the site is based on information and data furnished to OWNER or ENGINEER by the owners of such Underground Facilities or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

4.3.1.1. OWNER and ENGINEER shall not be responsible for the accuracy or completeness of any such information or data; and,

4.3.1.2. CONTRACTOR shall have full responsibility for reviewing and checking all such information and data, for locating all Underground Facilities shown or indicated in the Contract Documents, for coordination of the Work with the owners of such Underground Facilities during construction, for the safety and protection thereof as provided in paragraph 6.20 and repairing any damage thereto resulting from the Work, the cost of all of which will be considered as having been included in the Contract Price.

4.3.2. **Not Shown or Indicated.** If an Underground Facility is uncovered or revealed at or contiguous to the site which was not shown or indicated in the Contract Documents and which CONTRACTOR could not reasonably have been expected to be aware of, CONTRACTOR shall, promptly after becoming aware thereof and before performing any Work affected thereby (except in an emergency as permitted by paragraph 6.22), identify the owner of such Underground Facility and give written notice thereof to that owner and to OWNER and ENGINEER. ENGINEER will promptly review the Underground Facility to

determine the extent to which the Contract Documents should be modified to reflect and document the consequences of the existence of the Underground Facility, and the Contract Documents will be amended or supplemented to the extent necessary. During such time, CONTRACTOR shall be responsible for the safety and protection of such Underground Facility as provided in paragraph 6.20. CONTRACTOR shall be allowed an increase in the Contract Price, or an extension of the Contract Time, or both, to the extent that they are attributable to the existence of any Underground Facility that was not shown or indicated in the Contract Documents and which CONTRACTOR could not reasonably have been expected to be aware of. If the parties are unable to agree as to the amount or length thereof, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12.

Reference Points:

4.4. OWNER shall provide engineering surveys to establish reference points for construction which in ENGINEER's judgment are necessary to enable CONTRACTOR to proceed with the Work. CONTRACTOR shall be responsible for laying out the Work (unless otherwise specified in the General Requirements), shall protect and preserve the established reference points and shall make no changes or relocations without the prior written approval of OWNER. CONTRACTOR shall report to ENGINEER whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points by professionally qualified personnel.

ARTICLE 5—BONDS AND INSURANCE

Performance and Other Bonds:

5.1. CONTRACTOR shall furnish performance and payment Bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all CONTRACTOR's obligations under the Contract Documents. These Bonds shall remain in effect at least until one year after the date when final payment becomes due, except as otherwise provided by Law or Regulation or by the Contract Documents. CONTRACTOR shall also furnish such other Bonds as are required by the Supplementary Conditions. All Bonds shall be in the forms prescribed by Law or Regulation or by the Contract Documents and be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Accounts, U.S. Treasury Department. All Bonds signed by an agent must be accompanied by a certified copy of the authority to act.

5.2. If the surety on any Bond furnished by CONTRACTOR is declared a bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of

the Project is located or it ceases to meet the requirements of paragraph 5.1, CONTRACTOR shall within five days thereafter substitute another Bond and Surety, both of which must be acceptable to OWNER.

Contractor's Liability Insurance:

5.3. CONTRACTOR shall purchase and maintain such comprehensive general liability and other insurance as is appropriate for the Work being performed and furnished and as will provide protection from claims set forth below which may arise out of or result from CONTRACTOR's performance and furnishing of the Work and CONTRACTOR's other obligations under the Contract Documents, whether it is to be performed or furnished by CONTRACTOR, by any Subcontractor, by anyone directly or indirectly employed by any of them to perform or furnish any of the Work, or by anyone for whose acts any of them may be liable:

5.3.1. Claims under workers' or workmen's compensation, disability benefits and other similar employee benefit acts;

5.3.2. Claims for damages because of bodily injury, occupational sickness or disease, or death of CONTRACTOR's employees;

5.3.3. Claims for damages because of bodily injury, sickness or disease, or death of any person other than CONTRACTOR's employees;

5.3.4. Claims for damages insured by personal injury liability coverage which are sustained (a) by any person as a result of an offense directly or indirectly related to the employment of such person by CONTRACTOR, or (b) by any other person for any other reason;

5.3.5. Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom;

5.3.6. Claims arising out of operation of Laws or Regulations for damages because of bodily injury or death of any person or for damage to property; and

5.3.7. Claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

The insurance required by this paragraph 5.3 shall include the specific coverages and be written for not less than the limits of liability and coverages provided in the Supplementary Conditions, or required by law, whichever is greater. The comprehensive general liability insurance shall include completed operations insurance. All of the policies of insurance so required to be purchased and maintained (or the certificates or other evidence thereof) shall contain a provision or endorsement that the coverage afforded will not be cancelled, materially changed or renewal refused until at least

thirty days' prior written notice has been given to OWNER and ENGINEER by certified mail. All such insurance shall remain in effect until final payment and at all times thereafter when CONTRACTOR may be correcting, removing or replacing defective Work in accordance with paragraph 13.12. In addition, CONTRACTOR shall maintain such completed operations insurance for at least two years after final payment and furnish OWNER with evidence of continuation of such insurance at final payment and one year thereafter.

Contractual Liability Insurance:

5.4. The comprehensive general liability insurance required by paragraph 5.3 will include contractual liability insurance applicable to CONTRACTOR's obligations under paragraphs 6.30 and 6.31.

Owner's Liability Insurance:

5.5. OWNER shall be responsible for purchasing and maintaining OWNER's own liability insurance and, at OWNER's option, may purchase and maintain such insurance as will protect OWNER against claims which may arise from operations under the Contract Documents.

Property Insurance:

5.6. Unless otherwise provided in the Supplementary Conditions, OWNER shall purchase and maintain property insurance upon the Work at the site to the full insurable value thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER and ENGINEER's consultants in the Work, all of whom shall be listed as insureds or additional insured parties, shall insure against the perils of fire and extended coverage and shall include "all risk" insurance for physical loss and damage including theft, vandalism and malicious mischief, collapse and water damage, and such other perils as may be provided in the Supplementary Conditions, and shall include damages, losses and expenses arising out of or resulting from any insured loss or incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers, architects, attorneys and other professionals). If not covered under the "all risk" insurance or otherwise provided in the Supplementary Conditions, CONTRACTOR shall purchase and maintain similar property insurance on portions of the Work stored on and off the site or in transit when such portions of the Work are to be included in an Application for Payment.

5.7. OWNER shall purchase and maintain such boiler and machinery insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER AND ENGINEER's consultants in the Work, all of whom shall be listed as insured or additional insured parties.

5.8. All the policies of insurance (or the certificates or other evidence thereof) required to be purchased and maintained by OWNER in accordance with paragraphs 5.6 and 5.7 will contain a provision or endorsement that the coverage afforded will not be cancelled or materially changed or renewal refused until at least thirty days' prior written notice has been given to CONTRACTOR by certified mail and will contain waiver provisions in accordance with paragraph 5.11.2.

5.9. OWNER shall not be responsible for purchasing and maintaining any property insurance to protect the interests of CONTRACTOR, Subcontractors or others in the Work to the extent of any deductible amounts that are provided in the Supplementary Conditions. The risk of loss within the deductible amount, will be borne by CONTRACTOR, Subcontractor or others suffering any such loss and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

5.10. If CONTRACTOR requests in writing that other special insurance be included in the property insurance policy, OWNER shall, if possible, include such insurance, and the cost thereof will be charged to CONTRACTOR by appropriate Change Order or Written Amendment. Prior to commencement of the Work at the site, OWNER shall in writing advise CONTRACTOR whether or not such other insurance has been procured by OWNER.

Waiver of Rights:

5.11.1. OWNER and CONTRACTOR waive all rights against each other for all losses and damages caused by any of the perils covered by the policies of insurance provided in response to paragraphs 5.6 and 5.7 and any other property insurance applicable to the Work, and also waive all such rights against the Subcontractors, ENGINEER, ENGINEER's consultants and all other parties named as insureds in such policies for losses and damages so caused. As required by paragraph 6.11, each subcontract between CONTRACTOR and a Subcontractor will contain similar waiver provisions by the Subcontractor in favor of OWNER, CONTRACTOR, ENGINEER, ENGINEER's consultants and all other parties named as insureds. None of the above waivers shall extend to the rights that any of the insured parties may have to the proceeds of insurance held by OWNER as trustee or otherwise payable under any policy so issued.

5.11.2. OWNER and CONTRACTOR intend that any policies provided in response to paragraphs 5.6 and 5.7 shall protect all of the parties insured and provide primary coverage for all losses and damages caused by the perils covered thereby. Accordingly, all such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any of the parties named as insureds or additional insureds, and if the insurers require separate waiver forms to be signed by ENGINEER or ENGINEER's consultant OWNER will obtain the same, and if

such waiver forms are required of any Subcontractor, CONTRACTOR will obtain the same.

Receipt and Application of Proceeds:

5.12. Any insured loss under the policies of insurance required by paragraphs 5.6 and 5.7 will be adjusted with OWNER and made payable to OWNER as trustee for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of paragraph 5.13. OWNER shall deposit in a separate account any money so received, and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof and the Work and the cost thereof covered by an appropriate Change Order or Written Amendment.

5.13. OWNER as trustee shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within fifteen days after the occurrence of loss to OWNER's exercise of this power. If such objection be made, OWNER as trustee shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If required in writing by any party in interest, OWNER as trustee shall, upon the occurrence of an insured loss, give bond for the proper performance of such duties.

Acceptance of Insurance:

5.14. If OWNER has any objection to the coverage afforded by or other provisions of the insurance required to be purchased and maintained by CONTRACTOR in accordance with paragraphs 5.3 and 5.4 on the basis of its not complying with the Contract Documents, OWNER shall notify CONTRACTOR in writing thereof within ten days of the date of delivery of such certificates to OWNER in accordance with paragraph 2.7. If CONTRACTOR has any objection to the coverage afforded by or other provisions of the policies of insurance required to be purchased and maintained by OWNER in accordance with paragraphs 5.6 and 5.7 on the basis of their not complying with the Contract Documents, CONTRACTOR shall notify OWNER in writing thereof within ten days of the date of delivery of such certificates to CONTRACTOR in accordance with paragraph 2.7. OWNER and CONTRACTOR shall each provide to the other such additional information in respect of insurance provided by each as the other may reasonably request. Failure by OWNER or CONTRACTOR to give any such notice of objection within the time provided shall constitute acceptance of such insurance, purchased by the other as complying with the Contract Documents.

Partial Utilization—Property Insurance:

5.15. If OWNER finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, such use or occupancy may be accomplished in accordance with paragraph 14.10; provided that no

such use or occupancy shall commence before the insurers providing the property insurance have acknowledged notice thereof and in writing effected the changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be cancelled or lapse on account of any such partial use or occupancy.

ARTICLE 6—CONTRACTOR'S RESPONSIBILITIES

Supervision and Superintendence:

6.1. CONTRACTOR shall supervise and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences and procedures of construction, but CONTRACTOR shall not be responsible for the negligence of others in the design or selection of a specific means, method, technique, sequence or procedure of construction which is indicated in and required by the Contract Documents. CONTRACTOR shall be responsible to see that the finished Work complies accurately with the Contract Documents.

6.2. CONTRACTOR shall keep on the Work at all times during its progress a competent resident superintendent, who shall not be replaced without written notice to OWNER and ENGINEER except under extraordinary circumstances. The superintendent will be CONTRACTOR's representative at the site and shall have authority to act on behalf of CONTRACTOR. All communications given to the superintendent shall be as binding as if given to CONTRACTOR.

Labor, Materials and Equipment:

6.3. CONTRACTOR shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. CONTRACTOR shall at all times maintain good discipline and order at the site. Except in connection with the safety or protection of persons or the Work or property at the site or adjacent thereto, and except as otherwise indicated in the Contract Documents, all Work at the site shall be performed during regular working hours, and CONTRACTOR will not permit overtime work or the performance of Work on Saturday, Sunday or any legal holiday without OWNER's written consent given after prior written notice to ENGINEER.

6.4. Unless otherwise specified in the General Requirements, CONTRACTOR shall furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up and completion of the Work.

6.5. All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. If required by ENGINEER, CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable Supplier except as otherwise provided in the Contract Documents; but no provision of any such instructions will be effective to assign to ENGINEER, or any of ENGINEER's consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.15 or 9.16.

Adjusting Progress Schedule:

6.6. CONTRACTOR shall submit to ENGINEER for acceptance (to the extent indicated in paragraph 2.9) adjustments in the progress schedule to reflect the impact thereon of new developments; these will conform generally to the progress schedule then in effect and additionally will comply with any provisions of the General Requirements applicable thereto.

Substitutes or "Or-Equal" Items:

6.7.1. Whenever materials or equipment are specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier the naming of the item is intended to establish the type, function and quality required. Unless the name is followed by words indicating that no substitution is permitted, materials or equipment of other Suppliers may be accepted by ENGINEER if sufficient information is submitted by CONTRACTOR to allow ENGINEER to determine that the material or equipment proposed is equivalent or equal to that named. The procedure for review by ENGINEER will include the following as supplemented in the General Requirements. Requests for review of substitute items of material and equipment will not be accepted by ENGINEER from anyone other than CONTRACTOR. If CONTRACTOR wishes to furnish or use a substitute item of material or equipment, CONTRACTOR shall make written application to ENGINEER for acceptance thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar and of equal substance to that specified and be suited to the same use as that specified. The application will state that the evaluation and acceptance of the proposed substitute will not prejudice CONTRACTOR's achievement of Substantial Completion on time, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or

royalty. All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which shall be considered by ENGINEER in evaluating the proposed substitute. ENGINEER may require CONTRACTOR to furnish at CONTRACTOR's expense additional data about the proposed substitute.

6.7.2. If a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents, CONTRACTOR may furnish or utilize a substitute means, method, sequence, technique or procedure of construction acceptable to ENGINEER, if CONTRACTOR submits sufficient information to allow ENGINEER to determine that the substitute proposed is equivalent to that indicated or required by the Contract Documents. The procedure for review by ENGINEER will be similar to that provided in paragraph 6.7.1 as applied by ENGINEER and as may be supplemented in the General Requirements.

6.7.3. ENGINEER will be allowed a reasonable time within which to evaluate each proposed substitute. ENGINEER will be the sole judge of acceptability, and no substitute will be ordered, installed or utilized without ENGINEER's prior written acceptance which will be evidenced by either a Change Order or an approved Shop Drawing. OWNER may require CONTRACTOR to furnish at CONTRACTOR's expense a special performance guarantee or other surety with respect to any substitute. ENGINEER will record time required by ENGINEER and ENGINEER's consultants in evaluating substitutions proposed by CONTRACTOR and in making changes in the Contract Documents occasioned thereby. Whether or not ENGINEER accepts a proposed substitute, CONTRACTOR shall reimburse OWNER for the charges of ENGINEER and ENGINEER's consultants for evaluating each proposed substitute.

Concerning Subcontractors, Suppliers and Others:

6.8.1. CONTRACTOR shall not employ any Subcontractor, Supplier or other person or organization (including those acceptable to OWNER and ENGINEER as indicated in paragraph 6.8.2), whether initially or as a substitute, against whom OWNER or ENGINEER may have reasonable objection. CONTRACTOR shall not be required to employ any Subcontractor, Supplier or other person or organization to furnish or perform any of the Work against whom CONTRACTOR has reasonable objection.

6.8.2. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers or other persons or organizations (including those who are to furnish the principal items of materials and equipment) to be submitted to OWNER in advance of the specified date prior to the Effective Date of the Agreement for acceptance by

OWNER and ENGINEER and if CONTRACTOR has submitted a list thereof in accordance with the Supplementary Conditions, OWNER's or ENGINEER's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the bidding documents or the Contract Documents) of any such Subcontractor, Supplier or other person or organization so identified may be revoked on the basis of reasonable objection after due investigation, in which case CONTRACTOR shall submit an acceptable substitute, the Contract Price will be increased by the difference in the cost occasioned by such substitution and an appropriate Change Order will be issued or Written Amendment signed. No acceptance by OWNER or ENGINEER of any such Subcontractor, Supplier or other person or organization shall constitute a waiver of any right of OWNER or ENGINEER to reject defective Work.

6.9. CONTRACTOR shall be fully responsible to OWNER and ENGINEER for all acts and omissions of the Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR just as CONTRACTOR is responsible for CONTRACTOR's own acts and omissions. Nothing in the Contract Documents shall create any contractual relationship between OWNER or ENGINEER and any such Subcontractor, Supplier or other person or organization, nor shall it create any obligation on the part of OWNER or ENGINEER to pay or to see to the payment of any moneys due any such Subcontractor, Supplier or other person or organization except as may otherwise be required by Laws and Regulations.

6.10. The divisions and sections of the Specifications and the identifications of any Drawings shall not control CONTRACTOR in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

6.11. All Work performed for CONTRACTOR by a Subcontractor will be pursuant to an appropriate agreement between CONTRACTOR and the Subcontractor which specifically binds the Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of OWNER and ENGINEER and contains waiver provisions as required by paragraph 5.11. CONTRACTOR shall pay each Subcontractor a just share of any insurance moneys received by CONTRACTOR on account of losses under policies issued pursuant to paragraphs 5.6 and 5.7.

Patent Fees and Royalties:

6.12. CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of OWNER

or ENGINEER its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by OWNER in the Contract Documents. CONTRACTOR shall indemnify and hold harmless OWNER and ENGINEER and anyone directly or indirectly employed by either of them from and against all claims, damages, losses and expenses (including attorneys' fees and court and arbitration costs) arising out of any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product or device not specified in the Contract Documents, and shall defend all such claims in connection with any alleged infringement of such rights.

Permits:

6.13. Unless otherwise provided in the Supplementary Conditions, CONTRACTOR shall obtain and pay for all construction permits and licenses. OWNER shall assist CONTRACTOR, when necessary, in obtaining such permits and licenses. CONTRACTOR shall pay all governmental charges and inspection fees necessary for the prosecution of the Work, which are applicable at the time of opening of Bids, or if there are no Bids on the Effective Date of the Agreement. CONTRACTOR shall pay all charges of utility owners for connections to the Work, and OWNER shall pay all charges of such utility owners for capital costs related thereto such as plant investment fees.

Laws and Regulations:

6.14.1. CONTRACTOR shall give all notices and comply with all Laws and Regulations applicable to furnishing and performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither OWNER nor ENGINEER shall be responsible for monitoring CONTRACTOR's compliance with any Laws or Regulations.

6.14.2. If CONTRACTOR observes that the Specifications or Drawings are at variance with any Laws or Regulations, CONTRACTOR shall give ENGINEER prompt written notice thereof, and any necessary changes will be authorized by one of the methods indicated in paragraph 3.4. If CONTRACTOR performs any Work knowing or having reason to know that it is contrary to such Laws or Regulations, and without such notice to ENGINEER, CONTRACTOR shall bear all costs arising therefrom; however, it shall not be CONTRACTOR's primary responsibility to make certain that the Specifications and Drawings are in accordance with such Laws and Regulations.

Taxes:

6.15. CONTRACTOR shall pay all sales, consumer, use and other similar taxes required to be paid by CONTRACTOR in accordance with the Laws and Regulations of the

place of the Project which are applicable during the performance of the Work.

Use of Premises:

6.16. CONTRACTOR shall confine construction equipment, the storage of materials and equipment and the operations of workers to the Project site and land and areas identified in and permitted by the Contract Documents and other land and areas permitted by Laws and Regulations, rights-of-way, permits and easements, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment. CONTRACTOR shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof or of any land or areas contiguous thereto, resulting from the performance of the Work. Should any claim be made against OWNER or ENGINEER by any such owner or occupant because of the performance of the Work, CONTRACTOR shall promptly attempt to settle with such other party by agreement or otherwise resolve the claim by arbitration or at law. CONTRACTOR shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold OWNER and ENGINEER harmless from and against all claims, damages, losses and expenses (including, but not limited to, fees of engineers, architects, attorneys and other professionals and court and arbitration costs) arising directly, indirectly or consequentially out of any action, legal or equitable, brought by any such other party against OWNER or ENGINEER to the extent based on a claim arising out of CONTRACTOR's performance of the Work.

6.17. During the progress of the Work, CONTRACTOR shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work. At the completion of the Work CONTRACTOR shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, appliances, construction equipment and machinery, and surplus materials, and shall leave the site clean and ready for occupancy by OWNER. CONTRACTOR shall restore to original condition all property not designated for alteration by the Contract Documents.

6.18. CONTRACTOR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall CONTRACTOR subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

Record Documents:

6.19. CONTRACTOR shall maintain in a safe place at the site one record copy of all Drawings, Specifications, Addenda, Written Amendments, Change Orders, Work Directive Changes, Field Orders and written interpretations and clarifications (issued pursuant to paragraph 9.4) in good order and annotated to show all changes made during construction. These record documents together with all approved samples and a counterpart of all approved Shop Drawings will be available to ENGINEER for reference. Upon com-

pletion of the Work, these record documents, samples and Shop Drawings will be delivered to ENGINEER for OWNER.

Safety and Protection:

6.20. CONTRACTOR shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. CONTRACTOR shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

6.20.1. all employees on the Work and other persons and organizations who may be affected thereby;

6.20.2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the site; and

6.20.3. other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities and Underground Facilities not designated for removal, relocation or replacement in the course of construction.

CONTRACTOR shall comply with all applicable Laws and Regulations of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection. CONTRACTOR shall notify owners of adjacent property and of Underground Facilities and utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation and replacement of their property. All damage, injury or loss to any property referred to in paragraph 6.20.2 or 6.20.3 caused, directly or indirectly, in whole or in part, by CONTRACTOR, any Subcontractor, Supplier or any other person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, shall be remedied by CONTRACTOR (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of OWNER or ENGINEER or anyone employed by either of them or anyone for whose acts either of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of CONTRACTOR). CONTRACTOR's duties and responsibilities for the safety and protection of the Work shall continue until such time as all the Work is completed and ENGINEER has issued a notice to OWNER and CONTRACTOR in accordance with paragraph 14.13 that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.21. CONTRACTOR shall designate a responsible representative at the site whose duty shall be the prevention of accidents. This person shall be CONTRACTOR's superintendent unless otherwise designated in writing by CONTRACTOR to OWNER.

Emergencies:

6.22. In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, CONTRACTOR, without special instruction or authorization from ENGINEER or OWNER, is obligated to act to prevent threatened damage, injury or loss. CONTRACTOR shall give ENGINEER prompt written notice if CONTRACTOR believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby. If ENGINEER determines that a change in the Contract Documents is required because of the action taken in response to an emergency, a Work Directive Change or Change Order will be issued to document the consequences of the changes or variations.

Shop Drawings and Samples:

6.23. After checking and verifying all field measurements and after complying with applicable procedures specified in the General Requirements, CONTRACTOR shall submit to ENGINEER for review and approval in accordance with the accepted schedule of Shop Drawing submissions (see paragraph 2.9), or for other appropriate action if so indicated in the Supplementary Conditions, five copies (unless otherwise specified in the General Requirements) of all Shop Drawings, which will bear a stamp or specific written indication that CONTRACTOR has satisfied CONTRACTOR's responsibilities under the Contract Documents with respect to the review of the submission. All submissions will be identified as ENGINEER may require. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials and similar data to enable ENGINEER to review the information as required.

6.24. CONTRACTOR shall also submit to ENGINEER for review and approval with such promptness as to cause no delay in Work, all samples required by the Contract Documents. All samples will have been checked by and accompanied by a specific written indication that CONTRACTOR has satisfied CONTRACTOR's responsibilities under the Contract Documents with respect to the review of the submission and will be identified clearly as to material, Supplier, pertinent data such as catalog numbers and the use for which intended.

6.25.1. Before submission of each Shop Drawing or sample CONTRACTOR shall have determined and verified all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar data with respect thereto and reviewed or coordinated each Shop Drawing or sample with other Shop Drawings and samples and with the requirements of the Work and the Contract Documents.

6.25.2. At the time of each submission, CONTRACTOR shall give ENGINEER specific written notice of each variation that the Shop Drawings or samples may have from the requirements of the Contract Documents, and, in addition, shall cause a specific notation to be made on

each Shop Drawing submitted to ENGINEER for review and approval of each such variation.

6.26. ENGINEER will review and approve with reasonable promptness Shop Drawings and samples, but ENGINEER's review and approval will be only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents and shall not extend to means, methods, techniques, sequences or procedures of construction (except where a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions. CONTRACTOR shall make corrections required by ENGINEER, and shall return the required number of corrected copies of Shop Drawings and submit as required new samples for review and approval. CONTRACTOR shall direct specific attention in writing to revisions other than the corrections called for by ENGINEER on previous submittals.

6.27. ENGINEER's review and approval of Shop Drawings or samples shall not relieve CONTRACTOR from responsibility for any variation from the requirements of the Contract Documents unless CONTRACTOR has in writing called ENGINEER's attention to each such variation at the time of submission as required by paragraph 6.25.2 and ENGINEER has given written approval of each such variation by a specific written notation thereof incorporated in or accompanying the Shop Drawing or sample approval; nor will any approval by ENGINEER relieve CONTRACTOR from responsibility for errors or omissions in the Shop Drawings or from responsibility for having complied with the provisions of paragraph 6.25.1.

6.28. Where a Shop Drawing or sample is required by the Specifications, any related Work performed prior to ENGINEER's review and approval of the pertinent submission will be the sole expense and responsibility of CONTRACTOR.

Continuing the Work:

6.29. CONTRACTOR shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with OWNER. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by paragraph 15.5 or as CONTRACTOR and OWNER may otherwise agree in writing.

Indemnification:

6.30. To the fullest extent permitted by Laws and Regulations CONTRACTOR shall indemnify and hold harmless OWNER and ENGINEER and their consultants, agents and employees from and against all claims, damages, losses and expenses, direct, indirect or consequential (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs) arising out of or resulting from the performance of the Work,

provided that any such claim, damage, loss or expense (a) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including the loss of use resulting therefrom and (b) is caused in whole or in part by any negligent act or omission of CONTRACTOR, any Subcontractor, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder or arises by or is imposed by Law and Regulations regardless of the negligence of any such party.

6.31. In any and all claims against OWNER or ENGINEER or any of their consultants, agents or employees by any employee of CONTRACTOR, any Subcontractor, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph 6.30 shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for CONTRACTOR or any such Subcontractor or other person or organization under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts.

6.32. The obligations of CONTRACTOR under paragraph 6.30 shall not extend to the liability of ENGINEER, ENGINEER's consultants, agents or employees arising out of the preparation or approval of maps, drawings, opinions, reports, surveys, Change Orders, designs or specifications.

ARTICLE 7—OTHER WORK

Related Work at Site:

7.1. OWNER may perform other work related to the Project at the site by OWNER's own forces, have other work performed by utility owners or let other direct contracts therefor which shall contain General Conditions similar to these. If the fact that such other work is to be performed was not noted in the Contract Documents, written notice thereof will be given to CONTRACTOR prior to starting any such other work; and, if CONTRACTOR believes that such performance will involve additional expense to CONTRACTOR or requires additional time and the parties are unable to agree as to the extent thereof, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12.

7.2. CONTRACTOR shall afford each utility owner and other contractor who is a party to such a direct contract (or OWNER, if OWNER is performing the additional work with OWNER's employees) proper and safe access to the site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such work, and shall properly connect and coordinate the Work with theirs. CONTRACTOR shall do all cutting, fitting and patching of the Work that may be required to make its several parts come together properly and integrate with such other work. CON-

TRACTOR shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of ENGINEER and the others whose work will be affected. The duties and responsibilities of CONTRACTOR under this paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of CONTRACTOR in said direct contracts between OWNER and such utility owners and other contractors.

7.3. If any part of CONTRACTOR's Work depends for proper execution or results upon the work of any such other contractor or utility owner (or OWNER), CONTRACTOR shall inspect and promptly report to ENGINEER in writing any delays, defects or deficiencies in such work that render it unavailable or unsuitable for such proper execution and results. CONTRACTOR's failure so to report will constitute an acceptance of the other work as fit and proper for integration with CONTRACTOR's Work except for latent or non-apparent defects and deficiencies in the other work.

Coordination:

7.4. If OWNER contracts with others for the performance of other work on the Project at the site, the person or organization who will have authority and responsibility for coordination of the activities among the various prime contractors will be identified in the Supplementary Conditions, and the specific matters to be covered by such authority and responsibility will be itemized, and the extent of such authority and responsibilities will be provided, in the Supplementary Conditions. Unless otherwise provided in the Supplementary Conditions, neither OWNER nor ENGINEER shall have any authority or responsibility in respect of such coordination.

ARTICLE 8—OWNER'S RESPONSIBILITIES

8.1. OWNER shall issue all communications to CONTRACTOR through ENGINEER.

8.2. In case of termination of the employment of ENGINEER, OWNER shall appoint an engineer against whom CONTRACTOR makes no reasonable objection, whose status under the Contract Documents shall be that of the former ENGINEER. Any dispute in connection with such appointment shall be subject to arbitration.

8.3. OWNER shall furnish the data required of OWNER under the Contract Documents promptly and shall make payments to CONTRACTOR promptly after they are due as provided in paragraphs 14.4 and 14.13.

8.4. OWNER's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in paragraphs 4.1 and 4.4. Paragraph 4.2 refers to OWNER's identifying and making available to CONTRACTOR copies of reports of explorations and tests of subsurface conditions at the site and in existing struc-

tures which have been utilized by ENGINEER in preparing the Drawings and Specifications.

8.5. OWNER's responsibilities in respect of purchasing and maintaining liability and property insurance are set forth in paragraphs 5.5 through 5.8.

8.6. OWNER is obligated to execute Change Orders as indicated in paragraph 10.4.

8.7. OWNER's responsibility in respect of certain inspections, tests and approvals is set forth in paragraph 13.4.

8.8. In connection with OWNER's right to stop Work or suspend Work, see paragraphs 13.10 and 15.1. Paragraph 15.2 deals with OWNER's right to terminate services of CONTRACTOR under certain circumstances.

ARTICLE 9—ENGINEER'S STATUS DURING CONSTRUCTION

Owner's Representative:

9.1. ENGINEER will be OWNER's representative during the construction period. The duties and responsibilities and the limitations of authority of ENGINEER as OWNER's representative during construction are set forth in the Contract Documents and shall not be extended without written consent of OWNER and ENGINEER.

Visits to Site:

9.2. ENGINEER will make visits to the site at intervals appropriate to the various stages of construction to observe the progress and quality of the executed Work and to determine, in general, if the Work is proceeding in accordance with the Contract Documents. ENGINEER will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. ENGINEER's efforts will be directed toward providing for OWNER a greater degree of confidence that the completed Work will conform to the Contract Documents. On the basis of such visits and on-site observations as an experienced and qualified design professional, ENGINEER will keep OWNER informed of the progress of the Work and will endeavor to guard OWNER against defects and deficiencies in the Work.

Project Representation:

9.3. If OWNER and ENGINEER agree, ENGINEER will furnish a Resident Project Representative to assist ENGINEER in observing the performance of the Work. The duties, responsibilities and limitations of authority of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions. If OWNER designates another agent to represent OWNER at the site who is not ENGINEER's agent or employee, the duties, responsibilities and limitations of authority of such other person will be as provided in the Supplementary Conditions.

Clarifications and Interpretations:

9.4. ENGINEER will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents (in the form of Drawings or otherwise) as ENGINEER may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents. If CONTRACTOR believes that a written clarification or interpretation justifies an increase in the Contract Price or an extension of the Contract Time and the parties are unable to agree to the amount or extent thereof, CONTRACTOR may make a claim therefor as provided in Article 11 or Article 12.

Authorized Variations in Work:

9.5. ENGINEER may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Time and are consistent with the overall intent of the Contract Documents. These may be accomplished by a Field Order and will be binding on OWNER, and also on CONTRACTOR who shall perform the Work involved promptly. If CONTRACTOR believes that a Field Order justifies an increase in the Contract Price or an extension of the Contract Time and the parties are unable to agree as to the amount or extent thereof, CONTRACTOR may make a claim therefor as provided in Article 11 or 12.

Rejecting Defective Work:

9.6. ENGINEER will have authority to disapprove or reject Work which ENGINEER believes to be *defective*, and will also have authority to require special inspection or testing of the Work as provided in paragraph 13.9, whether or not the Work is fabricated, installed or completed.

Shop Drawings, Change Orders and Payments:

9.7 In connection with ENGINEER's responsibility for Shop Drawings and samples, see paragraphs 6.23 through 6.28 inclusive.

9.8. In connection with ENGINEER's responsibilities as to Change Orders, see Articles 10, 11 and 12.

9.9. In connection with ENGINEER's responsibilities in respect of Applications for Payment, etc., see Article 14.

Determinations for Unit Prices:

9.10. ENGINEER will determine the actual quantities and classifications of Unit Price Work performed by CONTRACTOR. ENGINEER will review with CONTRACTOR ENGINEER's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). ENGINEER's written decisions thereon will be final and binding upon OWNER and CONTRACTOR, unless, within ten days after the date of any such decision, either OWNER or CONTRACTOR delivers to the other party to the Agreement and

to ENGINEER written notice of intention to appeal from such a decision.

Decisions on Disputes:

9.11. ENGINEER will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. Claims, disputes and other matters relating to the acceptability of the Work or the interpretation of the requirements of the Contract Documents pertaining to the performance and furnishing of the Work and claims under Articles 11 and 12 in respect of changes in the Contract Price or Contract Time will be referred initially to ENGINEER in writing with a request for a formal decision in accordance with this paragraph, which ENGINEER will render in writing within a reasonable time. Written notice of each such claim, dispute and other matter will be delivered by the claimant to ENGINEER and the other party to the Agreement promptly (but in no event later than thirty days) after the occurrence of the event giving rise thereto, and written supporting data will be submitted to ENGINEER and the other party within sixty days after such occurrence unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim.

9.12. When functioning as interpreter and judge under paragraphs 9.10 and 9.11, ENGINEER will not show partiality to OWNER or CONTRACTOR and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity. The rendering of a decision by ENGINEER pursuant to paragraphs 9.10 and 9.11 with respect to any such claim, dispute or other matter (except any which have been waived by the making or acceptance of final payment as provided in paragraph 14.16) will be a condition precedent to any exercise by OWNER or CONTRACTOR of such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any such claim, dispute or other matter.

Limitations on ENGINEER's Responsibilities:

9.13. Neither ENGINEER's authority to act under this Article 9 or elsewhere in the Contract Documents nor any decision made by ENGINEER in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of ENGINEER to CONTRACTOR, any Sub-contractor, any Supplier, or any other person or organization performing any of the Work, or to any surety for any of them.

9.14. Whenever in the Contract Documents the terms "as ordered", "as directed", "as required", "as allowed", "as approved" or terms of like effect or import are used, or the adjectives "reasonable", "suitable", "acceptable", "proper" or "satisfactory" or adjectives of like effect or import are used to describe a requirement, direction, review or judgment of ENGINEER as to the Work, it is intended that such requirement, direction, review or judgment will be solely to evaluate the Work for compliance with the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective shall not be

effective to assign to ENGINEER any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.15 or 9.16.

9.15. ENGINEER will not be responsible for CONTRACTOR's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, and ENGINEER will not be responsible for CONTRACTOR's failure to perform or furnish the Work in accordance with the Contract Documents.

9.16. ENGINEER will not be responsible for the acts or omissions of CONTRACTOR or of any Subcontractor, any Supplier, or of any other person or organization performing or furnishing any of the Work.

ARTICLE 10—CHANGES IN THE WORK

10.1. Without invalidating the Agreement and without notice to any surety, OWNER may, at any time or from time to time, order additions, deletions or revisions in the Work; these will be authorized by a Written Amendment, a Change Order, or a Work Directive Change. Upon receipt of any such document, CONTRACTOR shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

10.2. If OWNER and CONTRACTOR are unable to agree as to the extent, if any, of an increase or decrease in the Contract Price or an extension or shortening of the Contract Time that should be allowed as a result of a Work Directive Change, a claim may be made therefor as provided in Article 11 or Article 12.

10.3. CONTRACTOR shall not be entitled to an increase in the Contract Price or an extension of the Contract Time with respect to any Work performed that is not required by the Contract Documents as amended, modified and supplemented as provided in paragraphs 3.4 and 3.5, except in the case of an emergency as provided in paragraph 6.22 and except in the case of uncovering Work as provided in paragraph 13.9.

10.4. OWNER and CONTRACTOR shall execute appropriate Change Orders (or Written Amendments) covering:

10.4.1. changes in the Work which are ordered by OWNER pursuant to paragraph 10.1, are required because of acceptance of defective Work under paragraph 13.13 or correcting defective Work under paragraph 13.14, or are agreed to by the parties;

10.4.2. changes in the Contract Price or Contract Time which are agreed to by the parties; and

10.4.3. changes in the Contract Price or Contract Time which embody the substance of any written decision rendered by ENGINEER pursuant to paragraph 9.11;

provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, CONTRACTOR shall carry on the Work and adhere to the progress schedule as provided in paragraph 6.29.

10.5. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Time) is required by the provisions of any Bond to be given to a surety, the giving of any such notice will be CONTRACTOR's responsibility, and the amount of each applicable Bond will be adjusted accordingly.

ARTICLE 11—CHANGE OF CONTRACT PRICE

11.1. The Contract Price constitutes the total compensation (subject to authorized adjustments) payable to CONTRACTOR for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by CONTRACTOR shall be at his expense without change in the Contract Price.

11.2. The Contract Price may only be changed by a Change Order or by a Written Amendment. Any claim for an increase or decrease in the Contract Price shall be based on written notice delivered by the party making the claim to the other party and to ENGINEER promptly (but in no event later than thirty days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the amount of the claim with supporting data shall be delivered within sixty days after such occurrence (unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by claimant's written statement that the amount claimed covers all known amounts (direct, indirect and consequential) to which the claimant is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Price shall be determined by ENGINEER in accordance with paragraph 9.11 if OWNER and CONTRACTOR cannot otherwise agree on the amount involved. No claim for an adjustment in the Contract Price will be valid if not submitted in accordance with this paragraph 11.2.

11.3. The value of any Work covered by a Change Order or of any claim for an increase or decrease in the Contract Price shall be determined in one of the following ways:

11.3.1. Where the Work involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of the items involved (subject to the provisions of paragraphs 11.9.1. through 11.9.3, inclusive).

allowances. No demand for additional payment on account of any thereof will be valid.

Prior to final payment, an appropriate Change Order will be issued as recommended by ENGINEER to reflect actual amounts due CONTRACTOR on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

Unit Price Work:

11.9.1. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the established unit prices for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by CONTRACTOR will be made by ENGINEER in accordance with Paragraph 9.10.

11.9.2. Each unit price will be deemed to include an amount considered by CONTRACTOR to be adequate to cover CONTRACTOR's overhead and profit for each separately identified item.

11.9.3. Where the quantity of any item of Unit Price Work performed by CONTRACTOR differs materially and significantly from the estimated quantity of such item indicated in the Agreement and there is no corresponding adjustment with respect to any other item of Work and if CONTRACTOR believes that CONTRACTOR has incurred additional expense as a result thereof, CONTRACTOR may make a claim for an increase in the Contract Price in accordance with Article 11 if the parties are unable to agree as to the amount of any such increase.

ARTICLE 12—CHANGE OF CONTRACT TIME

12.1. The Contract Time may only be changed by a Change Order or a Written Amendment. Any claim for an extension or shortening of the Contract Time shall be based on written notice delivered by the party making the claim to the other party and to ENGINEER promptly (but in no event later than thirty days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the extent of the claim with supporting data shall be delivered within sixty days after such occurrence (unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by the claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant has reason to believe it is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Time

shall be determined by ENGINEER in accordance with paragraph 9.11 if OWNER and CONTRACTOR cannot otherwise agree. No claim for an adjustment in the Contract Time will be valid if not submitted in accordance with the requirements of this paragraph 12.1.

12.2. The Contract Time will be extended in an amount equal to time lost due to delays beyond the control of CONTRACTOR if a claim is made therefor as provided in paragraph 12.1. Such delays shall include, but not be limited to, acts or neglect by OWNER or others performing additional work as contemplated by Article 7, or to fires, floods, labor disputes, epidemics, abnormal weather conditions or acts of God.

12.3. All time limits stated in the Contract Documents are of the essence of the Agreement. The provisions of this Article 12 shall not exclude recovery for damages (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs) for delay by either party.

ARTICLE 13—WARRANTY AND GUARANTEE; TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

Warranty and Guarantee:

13.1. CONTRACTOR warrants and guarantees to OWNER and ENGINEER that all Work will be in accordance with the Contract Documents and will not be *defective*. Prompt notice of all defects shall be given to CONTRACTOR. All *defective* Work, whether or not in place, may be rejected, corrected or accepted as provided in this Article 13.

Access to Work:

13.2. ENGINEER and ENGINEER's representatives, other representatives of OWNER, testing agencies and governmental agencies with jurisdictional interests will have access to the Work at reasonable times for their observation, inspecting and testing. CONTRACTOR shall provide proper and safe conditions for such access.

Tests and Inspections:

13.3. CONTRACTOR shall give ENGINEER timely notice of readiness of the Work for all required inspections, tests or approvals.

13.4. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) to specifically be inspected, tested or approved, CONTRACTOR shall assume full responsibility therefor, pay all costs in connection therewith and furnish ENGINEER the required certificates of inspection, testing or approval. CONTRACTOR shall also

be responsible for and shall pay all costs in connection with any inspection or testing required in connection with OWNER's or ENGINEER's acceptance of a Supplier of materials or equipment proposed to be incorporated in the Work, or of materials or equipment submitted for approval prior to CONTRACTOR's purchase thereof for incorporation in the Work. The cost of all inspections, tests and approvals in addition to the above which are required by the Contract Documents shall be paid by OWNER (unless otherwise specified).

13.5. All inspections, tests or approvals other than those required by Laws or Regulations of any public body having jurisdiction shall be performed by organizations acceptable to OWNER and CONTRACTOR (or by ENGINEER if so specified).

13.6. If any Work (including the work of others) that is to be inspected, tested or approved is covered without written concurrence of ENGINEER, it must, if requested by ENGINEER, be uncovered for observation. Such uncovering shall be at CONTRACTOR's expense unless CONTRACTOR has given ENGINEER timely notice of CONTRACTOR's intention to cover the same and ENGINEER has not acted with reasonable promptness in response to such notice.

13.7. Neither observations by ENGINEER nor inspections, tests or approvals by others shall relieve CONTRACTOR from CONTRACTOR's obligations to perform the Work in accordance with the Contract Documents.

Uncovering Work:

13.8. If any Work is covered contrary to the written request of ENGINEER, it must, if requested by ENGINEER, be uncovered for ENGINEER's observation and replaced at CONTRACTOR's expense.

13.9. If ENGINEER considers it necessary or advisable that covered Work be observed by ENGINEER or inspected or tested by others, CONTRACTOR, at ENGINEER's request, shall uncover, expose or otherwise make available for observation, inspection or testing as ENGINEER may require, that portion of the Work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is *defective*, CONTRACTOR shall bear all direct, indirect and consequential costs of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction, (including but not limited to fees and charges of engineers, architects, attorneys and other professionals), and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, may make a claim therefor as provided in Article 11. If, however, such Work is not found to be *defective*, CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction; and, if the parties are unable to agree as to the amount or extent

thereof, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12.

Owner May Stop the Work:

13.10. If the Work is *defective*, or CONTRACTOR fails to supply sufficient skilled workers or suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, OWNER may order CONTRACTOR to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of OWNER to stop the Work shall not give rise to any duty on the part of OWNER to exercise this right for the benefit of CONTRACTOR or any other party.

Correction or Removal of Defective Work:

13.11. If required by ENGINEER, CONTRACTOR shall promptly, as directed, either correct all *defective* Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by ENGINEER, remove it from the site and replace it with *nondefective* Work. CONTRACTOR shall bear all direct, indirect and consequential costs of such correction or removal (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) made necessary thereby.

One Year Correction Period:

13.12. If within one year after the date of Substantial Completion or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Work is found to be *defective*, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER's written instructions, either correct such *defective* Work, or, if it has been rejected by OWNER, remove it from the site and replace it with *nondefective* Work. If CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, OWNER may have the *defective* Work corrected or the rejected Work removed and replaced, and all direct, indirect and consequential costs of such removal and replacement (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) will be paid by CONTRACTOR. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications or by Written Amendment.

Acceptance of Defective Work:

13.13. If, instead of requiring correction or removal and replacement of *defective* Work, OWNER (and, prior to ENGINEER's recommendation of final payment, also ENGINEER) prefers to accept it, OWNER may do so. CONTRACTOR shall bear all direct, indirect and consequential

costs attributable to OWNER's evaluation of and determination to accept such *defective Work* (such costs to be approved by ENGINEER as to reasonableness and to include but not be limited to fees and charges of engineers, architects, attorneys and other professionals). If any such acceptance occurs prior to ENGINEER's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, OWNER may make a claim therefor as provided in Article 11. If the acceptance occurs after such recommendation, an appropriate amount will be paid by CONTRACTOR to OWNER.

OWNER May Correct Defective Work:

13.14. If CONTRACTOR fails within a reasonable time after written notice of ENGINEER to proceed to correct and to correct *defective Work* or to remove and replace rejected Work as required by ENGINEER in accordance with paragraph 13.11, or if CONTRACTOR fails to perform the Work in accordance with the Contract Documents, or if CONTRACTOR fails to comply with any other provision of the Contract Documents, OWNER may, after seven days' written notice to CONTRACTOR, correct and remedy any such deficiency. In exercising the rights and remedies under this paragraph OWNER shall proceed expeditiously. To the extent necessary to complete corrective and remedial action, OWNER may exclude CONTRACTOR from all or part of the site, take possession of all or part of the Work, and suspend CONTRACTOR's services related thereto, take possession of CONTRACTOR's tools, appliances, construction equipment and machinery at the site and incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere. CONTRACTOR shall allow OWNER, OWNER's representatives, agents and employees such access to the site as may be necessary to enable OWNER to exercise the rights and remedies under this paragraph. All direct, indirect and consequential costs of OWNER in exercising such rights and remedies will be charged against CONTRACTOR in an amount approved as to reasonableness by ENGINEER, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, OWNER may make a claim therefor as provided in Article 11. Such direct, indirect and consequential costs will include but not be limited to fees and charges of engineers, architects, attorneys and other professionals, all court and arbitration costs and all costs of repair and replacement of work of others destroyed or damaged by correction, removal or replacement of CONTRACTOR's *defective Work*. CONTRACTOR shall not be allowed an extension of the Contract Time because of any delay in performance of the Work attributable to the exercise by OWNER of OWNER's rights and remedies hereunder.

ARTICLE 14—PAYMENTS TO CONTRACTOR AND COMPLETION

Schedule of Values:

14.1. The schedule of values established as provided in paragraph 2.9 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to ENGINEER. Progress payments on account of Unit Price Work will be based on the number of units completed.

Application for Progress Payment:

14.2. At least twenty days before each progress payment is scheduled (but not more often than once a month), CONTRACTOR shall submit to ENGINEER for review an Application for Payment filled out and signed by CONTRACTOR covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice or other documentation warranting that OWNER has received the materials and equipment free and clear of all liens, charges, security interests and encumbrances (which are hereinafter in these General Conditions referred to as "Liens") and evidence that the materials and equipment are covered by appropriate property insurance and other arrangements to protect OWNER's interest therein, all of which will be satisfactory to OWNER. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

CONTRACTOR's Warranty of Title:

14.3. CONTRACTOR warrants and guarantees that title to all Work, materials and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to OWNER no later than the time of payment free and clear of all Liens.

Review of Applications for Progress Payment:

14.4. ENGINEER will, within ten days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to OWNER, or return the Application to CONTRACTOR indicating in writing ENGINEER's reasons for refusing to recommend payment. In the latter case, CONTRACTOR may make the necessary corrections and resubmit the Application. Ten days after presentation of the Application for Payment with ENGINEER's recommendation, the amount recommended will (subject to the provisions of the last sentence of paragraph 14.7) become due and when due will be paid by OWNER to CONTRACTOR.

14.5. ENGINEER's recommendation of any payment requested in an Application for Payment will constitute a

representation by ENGINEER to OWNER, based on ENGINEER's on-site observations of the Work in progress as an experienced and qualified design professional and on ENGINEER's review of the Application for Payment and the accompanying data and schedules that the Work has progressed to the point indicated; that, to the best of ENGINEER's knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under paragraph 9.10, and to any other qualifications stated in the recommendation); and that CONTRACTOR is entitled to payment of the amount recommended. However, by recommending any such payment ENGINEER will not thereby be deemed to have represented that exhaustive or continuous on-site inspections have been made to check the quality or the quantity of the Work beyond the responsibilities specifically assigned to ENGINEER in the Contract Documents or that there may not be other matters or issues between the parties that might entitle CONTRACTOR to be paid additionally by OWNER or OWNER to withhold payment to CONTRACTOR.

14.6. ENGINEER's recommendation of final payment will constitute an additional representation by ENGINEER to OWNER that the conditions precedent to CONTRACTOR's being entitled to final payment as set forth in paragraph 14.13 have been fulfilled.

14.7. ENGINEER may refuse to recommend the whole or any part of any payment if, in ENGINEER's opinion, it would be incorrect to make such representations to OWNER. ENGINEER may also refuse to recommend any such payment, or, because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously recommended, to such extent as may be necessary in ENGINEER's opinion to protect OWNER from loss because:

14.7.1. the Work is *defective*, or completed Work has been damaged requiring correction or replacement,

14.7.2. the Contract Price has been reduced by Written Amendment or Change Order,

14.7.3. OWNER has been required to correct *defective* Work or complete Work in accordance with paragraph 13.14, or

14.7.4. of ENGINEER's actual knowledge of the occurrence of any of the events enumerated in paragraphs 15.2.1 through 15.2.9 inclusive.

OWNER may refuse to make payment of the full amount recommended by ENGINEER because claims have been made against OWNER on account of CONTRACTOR's performance or furnishing of the Work or Liens have been filed in connection with the Work or there are other items entitling

OWNER to a set-off against the amount recommended, but OWNER must give CONTRACTOR immediate written notice (with a copy to ENGINEER) stating the reasons for such action.

Substantial Completion:

14.8. When CONTRACTOR considers the entire Work ready for its intended use CONTRACTOR shall notify OWNER and ENGINEER in writing that the entire Work is substantially complete (except for items specifically listed by CONTRACTOR as incomplete) and request that ENGINEER issue a certificate of Substantial Completion. Within a reasonable time thereafter, OWNER, CONTRACTOR and ENGINEER shall make an inspection of the Work to determine the status of completion. If ENGINEER does not consider the Work substantially complete, ENGINEER will notify CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers the Work substantially complete, ENGINEER will prepare and deliver to OWNER a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. OWNER shall have seven days after receipt of the tentative certificate during which to make written objection to ENGINEER as to any provisions of the certificate or attached list. If, after considering such objections, ENGINEER concludes that the Work is not substantially complete, ENGINEER will within fourteen days after submission of the tentative certificate to OWNER notify CONTRACTOR in writing, stating the reasons therefor. If, after consideration of OWNER's objections, ENGINEER considers the Work substantially complete, ENGINEER will within said fourteen days execute and deliver to OWNER and CONTRACTOR a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as ENGINEER believes justified after consideration of any objections from OWNER. At the time of delivery of the tentative certificate of Substantial Completion ENGINEER will deliver to OWNER and CONTRACTOR a written recommendation as to division of responsibilities pending final payment between OWNER and CONTRACTOR with respect to security, operation, safety, maintenance, heat, utilities, insurance and warranties. Unless OWNER and CONTRACTOR agree otherwise in writing and so inform ENGINEER prior to ENGINEER's issuing the definitive certificate of Substantial Completion, ENGINEER's aforesaid recommendation will be binding on OWNER and CONTRACTOR until final payment.

14.9. OWNER shall have the right to exclude CONTRACTOR from the Work after the date of Substantial Completion, but OWNER shall allow CONTRACTOR reasonable access to complete or correct items on the tentative list.

Partial Utilization:

14.10. Use by OWNER of any finished part of the Work, which has specifically been identified in the Contract Docu-

ments, or which OWNER, ENGINEER and CONTRACTOR agree constitutes a separately functioning and useable part of the Work that can be used by OWNER without significant interference with CONTRACTOR's performance of the remainder of the Work, may be accomplished prior to Substantial Completion of all the Work subject to the following:

14.10.1. OWNER at any time may request CONTRACTOR in writing to permit OWNER to use any such part of the Work which OWNER believes to be ready for its intended use and substantially complete. If CONTRACTOR agrees, CONTRACTOR will certify to OWNER and ENGINEER that said part of the Work is substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. CONTRACTOR at any time may notify OWNER and ENGINEER in writing that CONTRACTOR considers any such part of the Work ready for its intended use and substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. Within a reasonable time after either such request, OWNER, CONTRACTOR and ENGINEER shall make an inspection of that part of the Work to determine its status of completion. If ENGINEER does not consider that part of the Work to be substantially complete, ENGINEER will notify OWNER and CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers that part of the Work to be substantially complete, the provisions of paragraphs 14.8 and 14.9 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

14.10.2. OWNER may at any time request CONTRACTOR in writing to permit OWNER to take over operation of any such part of the Work although it is not substantially complete. A copy of such request will be sent to ENGINEER and within a reasonable time thereafter OWNER, CONTRACTOR and ENGINEER shall make an inspection of that part of the Work to determine its status of completion and will prepare a list of the items remaining to be completed or corrected thereon before final payment. If CONTRACTOR does not object in writing to OWNER and ENGINEER that such part of the Work is not ready for separate operation by OWNER, ENGINEER will finalize the list of items to be completed or corrected and will deliver such list to OWNER and CONTRACTOR together with a written recommendation as to the division of responsibilities pending final payment between OWNER and CONTRACTOR with respect to security, operation, safety, maintenance, utilities, insurance, warranties and guarantees for that part of the Work which will become binding upon OWNER and CONTRACTOR at the time when OWNER takes over such operation (unless they shall have otherwise agreed in writing and so informed ENGINEER). During such operation and prior to Substantial Completion of such part of the Work, OWNER shall allow CONTRACTOR reasonable access to complete or correct items on said list and to complete other related Work.

14.10.3. No occupancy or separate operation of part of the Work will be accomplished prior to compliance with the requirements of paragraph 5.15 in respect of property insurance.

Final Inspection:

14.11. Upon written notice from CONTRACTOR that the entire Work or an agreed portion thereof is complete, ENGINEER will make a final inspection with OWNER and CONTRACTOR and will notify CONTRACTOR in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. CONTRACTOR shall immediately take such measures as are necessary to remedy such deficiencies.

Final Application for Payment:

14.12. After CONTRACTOR has completed all such corrections to the satisfaction of ENGINEER and delivered all maintenance and operating instructions, schedules, guarantees, Bonds, certificates of inspection, marked-up record documents (as provided in paragraph 6.19) and other documents—all as required by the Contract Documents, and after ENGINEER has indicated that the Work is acceptable (subject to the provisions of paragraph 14.16), CONTRACTOR may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied by all documentation called for in the Contract Documents, together with complete and legally effective releases or waivers (satisfactory to OWNER) of all Liens arising out of or filed in connection with the Work. In lieu thereof and as approved by OWNER, CONTRACTOR may furnish receipts or releases in full; an affidavit of CONTRACTOR that the releases and receipts include all labor, services, material and equipment for which a Lien could be filed, and that all payrolls, material and equipment bills, and other indebtedness connected with the Work for which OWNER or OWNER's property might in any way be responsible, have been paid or otherwise satisfied; and consent of the surety, if any, to final payment. If any Subcontractor or Supplier fails to furnish a release or receipt in full, CONTRACTOR may furnish a Bond or other collateral satisfactory to OWNER to indemnify OWNER against any Lien.

Final Payment and Acceptance:

14.13. If, on the basis of ENGINEER's observation of the Work during construction and final inspection, and ENGINEER's review of the final Application for Payment and accompanying documentation—all as required by the Contract Documents, ENGINEER is satisfied that the Work has been completed and CONTRACTOR's other obligations under the Contract Documents have been fulfilled, ENGINEER will, within ten days after receipt of the final Application for Payment, indicate in writing ENGINEER's recommendation of payment and present the Application to OWNER for payment. Thereupon ENGINEER will give written notice to OWNER and CONTRACTOR that the Work is acceptable subject to the provisions of paragraph 14.16.

Otherwise, ENGINEER will return the Application to CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment, in which case CONTRACTOR shall make the necessary corrections and resubmit the Application. Thirty days after presentation to OWNER of the Application and accompanying documentation, in appropriate form and substance, and with ENGINEER's recommendation and notice of acceptability, the amount recommended by ENGINEER will become due and will be paid by OWNER to CONTRACTOR.

14.14. If, through no fault of CONTRACTOR, final completion of the Work is significantly delayed and if ENGINEER so confirms, OWNER shall, upon receipt of CONTRACTOR's final Application for Payment and recommendation of ENGINEER, and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by OWNER for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if Bonds have been furnished as required in paragraph 5.1, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by CONTRACTOR to ENGINEER with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

Contractor's Continuing Obligation:

14.15. CONTRACTOR's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. Neither recommendation of any progress or final payment by ENGINEER, nor the issuance of a certificate of Substantial Completion, nor any payment by OWNER to CONTRACTOR under the Contract Documents, nor any use or occupancy of the Work or any part thereof by OWNER, nor any act of acceptance by OWNER nor any failure to do so, nor any review and approval of a Shop Drawing or sample submission, nor the issuance of a notice of acceptability by ENGINEER pursuant to paragraph 14.13, nor any correction of defective Work by OWNER will constitute an acceptance of Work not in accordance with the Contract Documents or a release of CONTRACTOR's obligation to perform the Work in accordance with the Contract Documents (except as provided in paragraph 14.16).

Waiver of Claims:

14.16. The making and acceptance of final payment will constitute:

14.16.1. a waiver of all claims by OWNER against CONTRACTOR, except claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to paragraph 14.11 or from failure to comply with the Contract Documents or the terms of any special guarantees specified therein; however, it will not constitute a waiver by OWNER of any rights in respect of

CONTRACTOR's continuing obligations under the Contract Documents; and

14.16.2. a waiver of all claims by CONTRACTOR against OWNER other than those previously made in writing and still unsettled.

ARTICLE 15—SUSPENSION OF WORK AND TERMINATION

Owner May Suspend Work:

15.1. OWNER may, at any time and without cause, suspend the Work or any portion thereof for a period of not more than ninety days by notice in writing to CONTRACTOR and ENGINEER which will fix the date on which Work will be resumed. CONTRACTOR shall resume the Work on the date so fixed. CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension if CONTRACTOR makes an approved claim therefor as provided in Articles 11 and 12.

Owner May Terminate:

15.2. Upon the occurrence of any one or more of the following events:

15.2.1. if CONTRACTOR commences a voluntary case under any chapter of the Bankruptcy Code (Title 11, United States Code), as now or hereafter in effect, or if CONTRACTOR takes any equivalent or similar action by filing a petition or otherwise under any other federal or state law in effect at such time relating to the bankruptcy or insolvency;

15.2.2. if a petition is filed against CONTRACTOR under any chapter of the Bankruptcy Code as now or hereafter in effect at the time of filing, or if a petition is filed seeking any such equivalent or similar relief against CONTRACTOR under any other federal or state law in effect at the time relating to bankruptcy or insolvency;

15.2.3. if CONTRACTOR makes a general assignment for the benefit of creditors;

15.2.4. if a trustee, receiver, custodian or agent of CONTRACTOR is appointed under applicable law or under contract, whose appointment or authority to take charge of property of CONTRACTOR is for the purpose of enforcing a Lien against such property or for the purpose of general administration of such property for the benefit of CONTRACTOR's creditors;

15.2.5. if CONTRACTOR admits in writing an inability to pay its debts generally as they become due;

15.2.6. if CONTRACTOR persistently fails to perform the Work in accordance with the Contract Documents

(including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the progress schedule established under paragraph 2.9 as revised from time to time);

15.2.7. if CONTRACTOR disregards Laws or Regulations of any public body having jurisdiction;

15.2.8. if CONTRACTOR disregards the authority of ENGINEER; or

15.2.9. if CONTRACTOR otherwise violates in any substantial way any provisions of the Contract Documents;

OWNER may, after giving CONTRACTOR (and the surety, if there be one) seven days' written notice and to the extent permitted by Laws and Regulations, terminate the services of CONTRACTOR, exclude CONTRACTOR from the site and take possession of the Work and of all CONTRACTOR's tools, appliances, construction equipment and machinery at the site and use the same to the full extent they could be used by CONTRACTOR (without liability to CONTRACTOR for trespass or conversion), incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere, and finish the Work as OWNER may deem expedient. In such case CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds the direct, indirect and consequential costs of completing the Work (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs) such excess will be paid to CONTRACTOR. If such costs exceed such unpaid balance, CONTRACTOR shall pay the difference to OWNER. Such costs incurred by OWNER will be approved as to reasonableness by ENGINEER and incorporated in a Change Order, but when exercising any rights or remedies under this paragraph OWNER shall not be required to obtain the lowest price for the Work performed.

15.3. Where CONTRACTOR's services have been so terminated by OWNER, the termination will not affect any rights or remedies of OWNER against CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys due CONTRACTOR by OWNER will not release CONTRACTOR from liability.

15.4. Upon seven days' written notice to CONTRACTOR and ENGINEER, OWNER may, without cause and without prejudice to any other right or remedy, elect to abandon the Work and terminate the Agreement. In such case, CONTRACTOR shall be paid for all Work executed and any expense sustained plus reasonable termination expenses, which will include, but not be limited to, direct, indirect and consequential costs (including, but not limited to, fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs).

Contractor May Stop Work or Terminate:

15.5. If, through no act or fault of CONTRACTOR, the Work is suspended for a period of more than ninety days by OWNER or under an order of court or other public authority, or ENGINEER fails to act on any Application for Payment within thirty days after it is submitted, or OWNER fails for thirty days to pay CONTRACTOR any sum finally determined to be due, then CONTRACTOR may, upon seven days' written notice to OWNER and ENGINEER, terminate the Agreement and recover from OWNER payment for all Work executed and any expense sustained plus reasonable termination expenses. In addition and in lieu of terminating the Agreement, if ENGINEER has failed to act on an Application for Payment or OWNER has failed to make any payment as aforesaid, CONTRACTOR may upon seven days' written notice to OWNER and ENGINEER stop the Work until payment of all amounts then due. The provisions of this paragraph shall not relieve CONTRACTOR of the obligations under paragraph 6.29 to carry on the Work in accordance with the progress schedule and without delay during disputes and disagreements with OWNER.

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ARTICLE 16—ARBITRATION

16.1. All claims, disputes and other matters in question between OWNER and CONTRACTOR arising out of, or relating to the Contract Documents or the breach thereof (except for claims which have been waived by the making or acceptance of final payment as provided by paragraph 14.16) will be decided by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association then obtaining subject to the limitations of this Article 16. This agreement so to arbitrate and any other agreement or consent to arbitrate entered into in accordance herewith as provided in this Article 16 will be specifically enforceable under the prevailing law of any court having jurisdiction.

16.2. No demand for arbitration of any claim, dispute or other matter that is required to be referred to ENGINEER initially for decision in accordance with paragraph 9.11 will be made until the earlier of (a) the date on which ENGINEER has rendered a decision or (b) the tenth day after the parties have presented their evidence to ENGINEER if a written decision has not been rendered by ENGINEER before that date. No demand for arbitration of any such claim, dispute or other matter will be made later than thirty days after the date on which ENGINEER has rendered a written decision in respect thereof in accordance with paragraph 9.11; and the failure to demand arbitration within said thirty days' period shall result in ENGINEER's decision being final and binding upon OWNER and CONTRACTOR. If ENGINEER renders a decision after arbitration proceedings have been initiated, such decision may be entered as evidence but will not supersede the arbitration proceedings, except where the decision is acceptable to the parties concerned. No demand for arbitration of any written decision of ENGINEER rendered in accordance with paragraph 9.10 will be made later than ten days after the party making such demand has delivered written notice of intention to appeal as provided in paragraph 9.10.

16.3. Notice of the demand for arbitration will be filed in writing with the other party to the Agreement and with the

American Arbitration Association, and a copy will be sent to ENGINEER for information. The demand for arbitration will be made within the thirty-day or ten-day period specified in paragraph 16.2 as applicable, and in all other cases within a reasonable time after the claim, dispute or other matter in question has arisen, and in no event shall any such demand be made after the date when institution of legal or equitable proceedings based on such claim, dispute or other matter in question would be barred by the applicable statute of limitations.

16.4. No arbitration arising out of or relating to the Contract Documents shall include by consolidation, joinder or in any other manner any other person or entity (including ENGINEER, ENGINEER's agents, employees or consultants) who is not a party to this contract unless:

16.4.1. the inclusion of such other person or entity is necessary if complete relief is to be afforded among those who are already parties to the arbitration,

16.4.2. such other person or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration and which will arise in such proceedings, and

16.4.3. the written consent of the other person or entity sought to be included and of OWNER and CONTRACTOR has been obtained for such inclusion, which consent shall make specific reference to this paragraph; but no such consent shall constitute consent to arbitration of any dispute not specifically described in such consent or to arbitration with any party not specifically identified in such consent.

16.5. The award rendered by the arbitrators will be final, judgment may be entered upon it in any court having jurisdiction thereof, and will not be subject to modification or appeal except to the extent permitted by Sections 10 and 11 of the Federal Arbitration Act (9 U.S.C. §§10,11).

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ARTICLE 17—MISCELLANEOUS

Giving Notice:

17.1. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

Computation of Time:

17.2.1. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.2.2. A calendar day of twenty-four hours measured from midnight to the next midnight shall constitute a day.

General:

17.3. Should OWNER or CONTRACTOR suffer injury or damage to person or property because of any error, omission

or act of the other party or of any of the other party's employees or agents or others for whose acts the other party is legally liable, claim will be made in writing to the other party within a reasonable time of the first observance of such injury or damage. The provisions of this paragraph 17.3 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitations or repose.

17.4. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon CONTRACTOR by paragraphs 6.30, 13.1, 13.12, 13.14, 14.3 and 15.2 and all of the rights and remedies available to OWNER and ENGINEER thereunder, are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee or by other provisions of the Contract Documents, and the provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply. All representations, warranties and guarantees made in the Contract Documents will survive final payment and termination or completion of the Agreement.

SPECIFICATIONS

SPECIFICATION INDEX

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CATCH BASINS, INLETS & SPECIAL STRUCTURES

1.1 DESCRIPTION.

This work shall consist of catch basins, inlets and special structures, together with the necessary gray cast iron or ductile cast iron frames, grates or lids, all constructed in accordance with the specifications, where indicated or directed by the engineers, and conforming in all respects to lines, grades and dimensions shown on the plans and the construction standards, unless otherwise directed by the engineer.

1.2 MATERIALS.

All materials shall conform to the Material Requirements for Manholes in these specifications.

1.3 CONSTRUCTION METHODS.

A. Concrete

Poured or precast concrete structures shall be constructed in accordance with applicable provisions of the Section, "Manholes for Sewers".

B. Precast Reinforced Concrete Sections

Precast reinforced concrete sections shall be laid in grout composed of one (1) part Portland Cement to three (3) parts sand, by volume, based on dry materials or an approved bitumastic material.

C. Placing of Castings

Castings placed on concrete or precast concrete surfaces shall be set in full grout beds. The mortar shall be mixed in proportions of one (1) part Portland Cement to three (3) parts sand, based on dry materials. Castings shall conform to construction standards and shall be set accurately to the finished elevation so that no subsequent adjustment will be necessary.

D. Cleaning

All newly constructed catch basins, inlets and special structures shall be cleaned of any accumulation of silt, debris, or foreign matter of any kind, and shall be free from such accumulations at the time of final inspection.

CLEARING AND GRUBBING

PART 1 - GENERAL INFORMATION

1.1 DESCRIPTION

This work shall consist of clearing, grubbing, removing, and disposing of all vegetation and debris within the limits of the right-of-way and the construction limits of this project, except those objects that are designated to remain or are to be removed in accordance with other sections of these specifications. This work shall include the prevention of injury or defacement of all vegetation or other objects designated to remain.

PART 2 - CONSTRUCTION REQUIREMENTS

2.1 GENERAL

- A. Right-of-way lines and construction lines will be established. Trees, shrubs, plants, and other things to remain will be designated and shall be preserved by the Contractor.
- B. Any damage to natural terrain, vegetation, trees shrubs, plants or other objects, designated to remain shall be repaired with no additional payment. Tree wound dressing for cut or scarred surfaces of trees or shrubs shall be in accordance with Section 913.09 (c) of Indiana Department of Highways Specifications (1988).
- C. Dressing for treating tree wounds or cuts shall be one of the following:
 - 1. An approved black asphaltum base antiseptic paint.
 - 2. An approved black paint consisting of Bordeaux Mixture, raw linseed oil, and lampblack.
 - 3. An approved black paint consisting of zinc oxide, raw linseed oil, and lampblack.

2.2 CLEARING AND GRUBBING

- A. Surface objects, trees, stumps, roots, rocks, and other protruding objects not designated to remain shall be cleared and grubbed. Undisturbed sound stumps, roots, and nonperishable solid objects may be left, provided that they are a minimum of three (3) feet below the subgrade of final grade on slopes and embankments. The Contractor shall not be permitted to bury cleared materials on the project site.

- B. Burning of perishable materials shall be done only in accordance with local and state laws and ordinances.
- C. Perishable materials and debris shall be removed from the project site and disposed of at locations off of the site. Written permission shall be obtained from the property owner on whose property the materials and debris are to be placed. Materials and debris shall not be disposed of in low lying areas or wetlands.

PART 3 - PAYMENT

3.1 METHOD OF MEASUREMENT

There will be no measurement of clearing and grubbing.

3.2 BASIS OF PAYMENT

There will be no separate payment for clearing and grubbing. The cost of this work is to be included by the Contractor in the various other items of the Contract.

CONSTRUCTION ENGINEERING

PART I - GENERAL

1.1 DESCRIPTION.

Under this item the Contractor shall perform the Construction Engineering, including layout to complete the work specified in the Contract Documents.

1.2 QUALITY REQUIREMENTS.

Accuracy: The layout of control points, centerlines, benchmarks and other items shall be consistent with standard engineering practices. All surveys, not covered by other sections of these specifications, required for the layout of the work specified in the Contract documents shall be of second-order class I, or better, as defined in "Classification, Standards of Accuracy, and General Specifications of Geodetic Control Surveys" prepared by the Federal Geodetic control committee for the U.S. Department of Commerce.

PART 2 - MATERIALS

2.1 FIELD BOOKS AND PAPER.

The field books shall be the standard six (6) ring field book (6½" x 8") normally used in surveying. The paper shall be the standard six (6) hole paper (5½" x 7¼") normally used in surveying.

PART 3 - EXECUTION

3.1 REQUIREMENTS.

- A. The Contractor shall perform all necessary construction engineering, including layout, to insure that the work conforms to the lines, locations, grades, and elevations shown on the Contract Documents. The construction engineering shall include establishing all necessary lines, points, corners, etc. with adequate references for the recovery of said items during construction, running a level circuit to establish additional benchmarks for use during construction, setting stakes for structures, slopes, subgrade, paving, and any other stakes required for control lines and grades.

- B. The Contractor shall furnish all equipment, personnel, and materials including stakes, templates, straightedges, and other devices necessary for performing the construction engineering.
- C. Field notes shall be kept in standard field notebooks supplied by the Contractor in a clear, orderly, and neat manner consistent with standard engineering practices and procedures. The field books shall be available for inspection by the Consultant at all times and shall become the property of the Owner on completion of the work.
- D. When staking culverts or inlets, the Contractor shall perform the necessary checking to establish the proper location and grade to fit best the conditions on the site. The Consultant shall approve the location of each structure prior to the installation of the culvert or inlet.
- E. The Consultant may check the accuracy of the construction engineering as necessary, but will assume no responsibility for the accuracy of engineering layout or the final result of construction accuracy.
- F. The supervision of the Contractor's construction engineering personnel shall be the responsibility of the Contractor and any such errors resulting from the operations of such personnel shall be corrected at the expense of the Contractor and at no additional cost to the Owner.

PART 4 - PAYMENT

There will be no measurement of construction engineering. There will be no separate payment for construction engineering. Payment for construction engineering will be included in other items of the Contract.

CORRUGATED METAL PIPE

PART 1 - GENERAL INFORMATION

1.1 DESCRIPTION

This work shall consist of the installation of corrugated metal pipe in accordance with these specifications and in conformance with the Drawings (Plans), cross sections, typical cross sections and construction standards.

1.2 QUALITY ASSURANCE

- A. The Contractor shall provide the name of the manufacturer and the supplier where the corrugated metal pipe was purchased. The gauge of the pipe shall be marked on the pipe. If the gauge is not marked by the manufacturer to supplier, then it shall be marked by the Contractor with spray paint or other suitable means.
- B. All corrugated metal pipe shall be manufactured by an experienced and reputable manufacturer whose pipe has been used commercially for at least three (3) years.

PART 2 - PRODUCTS

2.1 CORRUGATED METAL PIPE MATERIALS

- A. This pipe and the coupling bands shall be galvanized steel or aluminum coated steel in accordance with AASHTO M 36 Type III and IIIA except as follows:
 - 1) Resistance spot welded lap joints will not be permitted.
 - 2) Band couplers shall have corrugations that mesh with the corrugations of the pipes. Type IIIA may only be used in place of 6 inch round pipe.
- B. If the corrugated metal pipe is to be bituminous coated, it shall be in accordance with Section 907.07 of the Standard Specifications (1988) of the Indiana Department of Highways for Type A coated pipe. Type A is fully bituminous coated corrugated steel or aluminum pipe.

PART 3 - CONSTRUCTION REQUIREMENTS

3.1 PIPE TRENCH EXCAVATION

- A. The trench excavation for corrugated metal pipe shall begin at the outlet end and proceed towards the upper end. The trench shall be of sufficient width to provide ample working space on both sides of the pipe and to provide space for proper compaction of the backfill around the pipe.
- B. If the trench excavation is made too deep, proper pipe bedding shall be made by backfilling with an approved material to the required elevation. The backfill material shall be compacted into place in order to prevent settling of the pipe or erosion of the backfill.
- C. If stable soils are not found at the required trench bottom grade, the trench shall be excavated at least six (6) inches below the proposed bottom of the CMP elevation. Then the trench shall be backfilled, compacted, and shaped to the required elevation.

3.2 LAYING PIPE

Corrugated metal pipe shall not be laid on frozen or muddy trench bottom. CMP shall not have a firm bearing for its entire length. Placement of the pipe shall begin at the outlet end and proceed upstream. The Contractor shall place the pipe according to the lines, grades and elevations indicated on the plans and construction standards.

3.3 BACKFILLING

Backfill material shall be placed around and over the CMP in six (6) to eight (8) inch lifts. Each lift shall be compacted with caution in order to insure that the pipe is not crushed or displaced.

PART 4 - PAYMENT

4.1 METHOD OF MEASUREMENT

Corrugated metal pipe (CMP) will be measured on a linear foot basis for the size, type and gauge indicated on the plans or construction standards. Measurement will be made of the pipe in place only. No measurement will be made of the excavation, backfill, joints, fittings and other items necessary for a complete installation unless listed as a separate bid item.

4.2 BASIS OF PAYMENT

A. Payment will be made under:

<u>PAY ITEM</u>	<u>PAY UNIT</u>
_____ in. CMP, _____ gauge	Linear Foot (L.F.)
_____ in. CMP End Section	Each (EA.)

- B. Trench excavation, dewatering of the trench, base stabilization, backfill material, compaction, fittings, joints, bedding material, replacement/repair of farm field tile encountered, protection/repair of other utilities, disposal of excess excavated material, and all other construction items and materials necessary to completely install corrugated metal pipe according to the plans, these specification and construction standards will not be paid for separately. The cost of the above items shall be included in the linear foot cost of CMP. No additional or separate payment shall be made for these items unless listed in the Bid proposal by the Consultant as a separate pay item.

EXCAVATING, BACKFILLING, AND COMPACTING

PART 1 - GENERAL INFORMATION.

1.1 DESCRIPTION.

Work include: Excavate, backfill, compact, and grade the site to the lines and elevations shown on the plans, cross sections, typical cross sections, and construction standards, as specified herein, and as needed to meet the requirements of the construction shown in the Contract Documents.

1.2 QUALITY ASSURANCE.

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Use equipment adequate in size, capacity, and numbers to accomplish the work of this Section in a timely manner.
- C. In addition to complying with requirements of governmental agencies having jurisdiction, comply with the directions of the soil engineer and soils report (if made a part of the Construction Contract).

PART 2 - PRODUCTS.

2.1 SOIL MATERIALS.

- A. Provide fill and backfill soil materials free from organic matter and deleterious substances, containing no rocks or lumps over 6" in greatest dimension, and with not more than fifteen (15) percent of the rocks or lumps larger than 2-3/8" in their greatest dimension.
- B. Fill material is subject to the approval of the soil engineer, and is that material removed from excavations or imported from off-site borrow areas, predominantly granular, non-expansive soils free from roots and other deleterious matter.
- C. Do not permit rocks having a dimension greater than 1" in the upper 12" of fill or embankment.

- D. Cohesionless material used for structural backfill: Provide sand free from organic material and other foreign matter, as approved by the soil engineer.
- E. Where granular base is called for under building slabs, provide aggregate complying with requirements of ASTM C30 uniformly graded and clean.

2.2 WEED KILLER.

Provide a dry, free-flowing, dust-free chemical compound, soluble in water, capable of inhibiting growth of vegetation, and approved for use on this Work by governmental agencies having jurisdiction.

2.3 TOPSOIL.

- A. Where and if shown on the Drawings or otherwise required, provide topsoil consisting of friable, fertile soil of loamy character, containing an amount of organic matter normal to the region, capable of sustaining healthy plant life, and reasonably free from subsoil, roots, heavy or stiff clay, stones larger than 1" in greatest dimension, noxious seeds, sticks brush, litter and other deleterious matter.
- B. Obtain topsoil from sources within the project limits, or provide imported topsoil obtained from sources outside the project limits, or from both sources.

2.4 OTHER MATERIALS.

Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Engineer.

PART 3 - SURFACE CONDITIONS.

3.1 SURFACE CONDITIONS

Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 PROCEDURES

- A. The Contractor shall proceed with caution during excavation so the exact location of underground utilities and structures, both known and unknown,

may be determined. The Contractor shall be responsible for the repair of utilities and structures when broken or otherwise damaged.

- B. Whenever, in the opinion of the Engineer, it is necessary to explore and excavate to determine the location of underground structures, the Contractor shall make explorations and excavations for such purpose.

C. Utilities:

- 1) Unless shown to be removed, protect active utility lines shown on the Drawings or otherwise made known to the Contractor prior to excavating. If damaged, repair or replace at no additional cost to the owner.
- 2) If active utility lines are encountered, and are not shown on the Drawings or otherwise made known to the Contractor, promptly take necessary steps to assure that service is not interrupted.
- 3) If service is interrupted as a result of work under this Section, immediately restore service by repairing the damaged utility at no additional cost to the Owner.
- 4) If existing utilities are found to interfere with the permanent facilities being constructed under this Section, immediately notify the Consultant and secure his instructions.
- 5) Do not proceed with permanent relocation of utilities until written instructions are received from the Consultant.

D. Protection of persons and property:

- 1) Barricade open holes and depressions occurring as part of the Work, and post warning lights on property adjacent to or with public access.
- 2) Operate warning lights during hours from dusk to dawn each day and as otherwise required.
- 3) Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, washout, and other hazards created by operations under this Section.
- 4) The Contractor shall so conduct the work that no equipment, material, or debris will be placed or allowed to fall upon private property in the vicinity of the work, unless he shall have first obtain the property owner's written consent thereto and shall have shown said written consent to the Consultant.
- 5) Dewatering: Keep excavations free from water until foundations, structures, and piping are completed and will safely withstand forces generated by water. Provide sufficient dewatering equipment and

make proper arrangements for the disposal of water from dewatering operation. dewatering shall not damage property, create nuisances, or interfere with other work. Do not use sanitary sewers for the disposal of water from dewatering operations.

- 6) Erosion Control: Erosion control is required for all work. soil erosion control consists of mechanical and vegetative type measures taken by the Contractor to prevent erosion of soil during the construction process. It shall be the responsibility of the Contractor during construction to prevent such detrimental soil erosion, to the satisfaction of the Consultant, from occurring during the prosecution of the work.
- 7) Use means necessary to prevent dust becoming a nuisance to the public, to neighbors, and to other work being performed on or near the site.
- 8) Maintain access to adjacent areas at all times.

3.3 EXCAVATING

- A. Perform excavating of every type of material encountered within the limits of the Work to the lines, grades, and elevations indicated on the plans and specified herein.
- B. Satisfactory excavated materials: Transport to, and place in, fill or embankment areas within the limits of the Work.
- C. Surplus materials: Dispose of unsatisfactory excavated material, and surplus satisfactory excavated material, away from the site at disposal areas arranged and paid for by the Contractor.
- D. Excavation of rock
 - 1) Where rocks, boulders, granite, or similar material is encountered, and where such material cannot be removed or excavated by conventional earth moving or ripping equipment, take required steps to proceed with the general grading operations of the Work, and remove or excavate such material by means which will neither cause additional cost to the Owner nor endanger buildings or structures whether on or off the site.
 - 2) Do not use explosives without written permission from the Consultant.
- E. Excavate and backfill in a manner and sequence that will provide proper drainage at all times.
- F. Borrow: Obtain material required for fill or embankment in excess of that produced within the grading limits of the Work from borrow areas selected and paid for by the Contractor and approved by the Consultant.

- G. Ditches and gutters:
 - 1) Cut accurately to the cross sections, grades, and elevations shown.
 - 2) Maintain excavations free from detrimental quantities of leaves, sticks, trash, and other debris until completion of the Work.
 - 3) Dispose of excavated materials as shown on the Drawings or directed by the Consultant; except do not in any case deposit materials less than 3'0" from the edge of any ditch or stream.
- H. Unauthorized excavation:
 - 1) Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific instruction from the Consultant or the soil engineer.
 - 2) Under footings, foundations, or retaining walls:
 - a. Fill unauthorized excavations by extending the indicated bottom elevation of the footing or base to the excavation bottom, without altering the required top elevation.
 - b. When acceptable to the soil engineer, lean concrete fill may be used to bring the bottom elevation to proper position.
 - 3) Elsewhere, backfill and compact unauthorized elevations as specified for authorized excavations, unless otherwise directed by the soil engineer.
- I. Stability of excavations:
 - 1) Slope sides of excavations to 1:1 or flatter.
 - 2) Shore and brace where sloping is not possible because of space restrictions or stability of the materials being excavated.
 - 3) Maintain sides and slopes of excavations in a safe condition until completion.
- J. Shoring and bracing:
 - 1) Provide materials for shoring and bracing as may be necessary for safety of personnel, protection of work, and compliance with requirements of governmental agencies having jurisdiction.
 - 2) Maintain shoring and bracing in excavations regardless of the time period excavations will be open.
 - 3) Carry shoring and bracing down as excavation progresses.
- K. Excavating for structures:
 - 1) Conform to elevations and dimensions shown within a tolerance of 0.10 foot, and extending a sufficient distance from footings and foundations to permit placing and removing concrete formwork, installation of services, other construction required, and for inspection.

- 2) In excavating for footings and foundations, take care not to disturb bottom of excavation:
 - a. Excavate by hand tools to final grade just before concrete is placed.
 - b. Trim bottoms to required lines and grades to leave solid base to receive concrete.
- 3) Excavate for footings and foundations only after general site excavating, filling, and grading are complete.
- L. Excavating for pavements: Cut surface under pavements to comply with cross sections, elevations and grades.
- M. Cold weather protection: Protect excavation bottoms against freezing when atmospheric temperature is less than 35 degrees Fahrenheit.
- N. Appurtenances: Included in the unit price for Common Excavation will be the cost for removing, maintaining, and relocating any objects as needed to proceed with the work. This work shall include, but is not limited to, removing signs, maintaining them in temporary locations, and relocating them; removing manholes, maintaining them in a temporary location and relocating them as directed by the Consultant.

3.4 FILLING AND BACKFILLING.

- A. General:
 - 1) For each classification listed below, place acceptable soil material in layers to required subgrade elevations.
 - 2) In excavations, use satisfactory excavated or borrow material.
 - 3) Under asphalt pavements, use subbase materials.
 - 4) Under building slabs, use granular fill, if so called for on the Drawings, complying with aggregate in conformance with ASTM C30, uniformly graded and clean.
- B. Backfill excavations as promptly as progress of Work permits, but not until completion of the following:
 - 1) Acceptance of construction below finish grade including, where applicable, dampproofing, and waterproofing.
 - 2) Inspecting, testing, approving, and recording locations of underground utilities.
 - 3) Removing concrete formwork.
 - 4) Removing shoring and bracing and backfilling of voids with satisfactory materials.
 - 5) Removing trash and debris.
 - 6) Placement of horizontal bracing on horizontally supported walls.

- C. Ground surface preparation:
 - 1) Remove vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious matter from ground surface prior to placement of fills.
 - 2) Plow, strip, or break up sloped surfaces steeper than one (1) vertical to four (4) horizontal so that fill material will bond with existing surface.
 - 3) When existing ground surface has a density less than that specified under "compacting" for the particular area, break up the ground surface, pulverize, moisture-condition to optimum moisture content, and compact to required depth and percentage of maximum density.
 - 4) At exposed soils in areas to be paved, scarify to a minimum depth of 6", and recompact at a moisture content that will permit proper compaction as specified for fill.
- D. Placing and compacting:
 - 1) Place backfill and fill materials in layers not more than 8" in loose depth.
 - 2) Before compacting, moisten or aerate each layer as necessary to provide the optimum moisture content.
 - 3) Compact each layer to required percentage of maximum density of area.
 - 4) Do not place backfill or fill material on surfaces that are muddy, frozen, or containing frost or ice.
 - 5) Place backfill and fill materials evenly.
 - 6) Take care to prevent wedging action of backfill against structures by carrying the material uniformly around the structure to approximately the same elevation in each lift.
 - 7) Where the construction includes basement or other underground walls having structural floors over them, do not backfill such walls until the structural floors are in place and have attained sufficient strength to support the walls.

3.5 GRADING.

- A. General:
 - 1) Uniformly grade the areas within limits of grading under this Section, including adjacent transition areas.
 - 2) Smooth the finished surfaces within specified tolerance.
 - 3) Compact with uniform levels or slopes between points where elevations are shown on the Drawings or between such points and existing grades.

- 4) Where a change of slope is indicated on the Drawings, construct a rolled transition section having a minimum radius of approximately 8'0" feet unless adjacent construction will not permit such a transition, or if such a transition defeats positive control of drainage.
- B. Grading outside building lines:
- 1) Grade areas adjacent to buildings to achieve drainage away from the structures and to prevent ponding.
 - 2) Finish the surfaces to be free from irregular surface changes, and shape the surface of areas scheduled to be under walks to line, grade and cross section, with finished surface not more than 0.10 feet above or below the required subgrade elevation.

3.6 COMPACTING

- A. Control soil compaction during construction to provide the minimum percentage of density specified for each area as determined according to ASTM D1557.
- B. Provide not less than the following maximum density of soil material compacted at optimum moisture content for the actual density of each layer of soil material in place and as approved by the soil engineer.
- 1) Lawn and unpaved areas: Compact the top 8" of subgrade and each layer of fill material or backfill material at 90 percent of maximum density.
 - 2) Compact the upper 12" of filled areas, or natural soils exposed by excavating, at 85% of maximum density.
- C. Moisture control:
- 1) Where subgrade or layer of soil material must be moisture-conditioned before compacting, uniformly apply water to surface of subgrade or layer of soil material to prevent free water appearing on surface during or subsequent to compacting operations.
 - 2) Remove and replace, or scarify and air dry, soil material that is too wet to permit compacting to the specified density.
 - 3) Soil material that has been removed because it is too wet to permit compacting may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing, or pulverizing until moisture content is reduced to a satisfactory value as determined by moisture-density relation tests approved by the soil engineer.

3.7 FIELD QUALITY CONTROL.

- A. Secure the soil engineer's inspection and approval of subgrades and fill layers before subsequent construction is permitted thereon.

- B. Provide at least the following tests to the approval of the soil engineer:
 - 1) At paved areas, at least one field density test for every 2,000 square feet of paved areas, but not less than three (3) tests:
 - 2) In each compacted fill layer, one (1) field density test for every 2,000 square feet of overlaying paved area, but not less than three (3) tests.
- C. If, in the Consultant's opinion based on reports of the testing laboratory, subgrade, or fills which have been placed are below specified density, provide additional compacting and testing.

3.8 MAINTENANCE.

- A. Protection of newly graded areas:
 - 1) Protect newly graded areas from traffic and erosion, and keep free from trash and weeds.
 - 2) Repair and reestablish grades in settled, eroded and rutted areas to the specified tolerances.
- B. Where completed areas are disturbed by subsequent construction operations or adverse weather, scarify the surface, reshape, and compact to the required density prior to further construction.

3.9 CERTIFICATION.

Upon completion of this portion of the Work, and as a condition of its acceptance, deliver to the Consultant a written report from the soil engineer certifying that the compaction requirements have been obtained. State in the report the area of fill or embankment, the compaction density obtained, and the type or classification of fill material placed.

PART 4 - PAYMENT

4.1 METHOD OF MEASUREMENT

There will be no measurement of excavating, backfilling and compacting.

4.2 BASIS OF PAYMENT

There will be no separate payment for excavating, backfilling and compacting. The cost of this work is to be included by the Contractor in the various other items of the Contract.

FINISHING SHOULDERS, DITCHES, AND SLOPES

PART 1 - GENERAL INFORMATION

1.1 DESCRIPTION

This work shall consist of the final shaping and dressing of shoulders, ditches, and slopes by hand or by machine methods, or both, to the required smoothness in accordance with these specifications and in close conformance with the elevations, grades, typical cross sections, and cross sections shown on the plans or on the construction standards.

PART 2 - CONSTRUCTION REQUIREMENTS

2.1 FINISHING SHOULDERS

- A. Unless otherwise provided, shoulders shall be constructed of earth or other approved material which contains no sod, weeds, sticks, roots, or other perishable matter. The inside edges shall be built up slightly above the finished surface of the adjoining pavement and compacted thoroughly with a roller weighing no less than five (5) tons and with the roller wheel slightly overlapping the pavement. Rolling shall continue until there is no break between the pavement and shoulders, and until the required cross section is obtained.
- B. In those areas where rolling is not practicable on shoulders for approach pavements or other miscellaneous areas, compaction shall be obtained with mechanical tamps, vibrators, or other satisfactory means. Except where permission has been granted to widen shoulders to dispose of surplus excavation, the outside edges shall be parallel to the pavement edges.

2.2 FINISHING DITCHES.

Ditches shall be finished to the lines and grades shown on the plans, typical cross sections and cross sections or as otherwise directed by the Consultant. The edges shall be parallel to the pavement unless it is necessary to have the ditch gradient different from that of the pavement in order to obtain proper drainage.

2.3 FINISHING SLOPES.

All cut and fill slopes shall be constructed to typical cross sections and cross sections shown on Plans or to revised sections where cuts are widened to obtain additional material or fills widened to utilize excess. Cut and fill slopes shall be finished to degree ordinarily obtained by a blade grader, scraper, or hand shovel.

PART 3 - PAYMENT

3.1 METHOD OF MEASUREMENT

Finishing of shoulders, ditches, and slopes will not be measured.

3.2 BASIS OF PAYMENT

There will be no separate payment for finishing of shoulders, ditches, and slopes. The cost of this work is to be included by the Contractor in the various other items of the contract.

GEOTEXTILE FABRIC CONSTRUCTION

PART I - GENERAL DESCRIPTION

1.1 DESCRIPTION

Geotextile Fabric Construction shall consist of storage and handling, protection from sunlight, excavation, grading, preparation of the surface to receive the fabric, placement of the fabric, joining, overlapping, pinning and all other incidentals needed to complete the work. Geotextile Fabric Construction shall be in accordance with this specification and in close conformance with the lines, grades, elevations, and materials shown on the drawings or further specified in the notes on the Drawings.

1.2 QUALITY ASSURANCE

The Contractor shall provide samples of the Geotextile Fabric to the Owner and Consultant before construction. Deliver sample and manufacturers specifications for installation to Owner and Consultant.

PART II - GEOTEXTILE FABRIC CONSTRUCTION

2.1 MATERIALS

- A. Geotextile Fabric shall consist of strong, rot resistant, chemically stable long-chain synthetic polymer material dimensionally stable with distinct and measurable openings. The plastic or yarn fibers used in the geotextile shall consist of any long-chain synthetic polymer composed of at least 85 percent by weight of polyefins, polyesters, or polyamides, and shall contain stabilizers and inhibitors added to the base plastic to make the filaments resistant to deterioration due to ultraviolet and heat exposure. The geotextile shall be calendered or otherwise finished so that the yarns or fibers will retain their relative position with respect to each other.
- B. For further information on the type and/or manufacturers name of the geotextile fabric to be used on this project, see the Drawings or the Special Requirements.
- C. Geotextile fabric shall meet the requirements specified in Section 912.18 (Geotextile for use Under Riprap) of the Standard Specifications (1988) of the Indiana Department of Highways.

PART III - CONSTRUCTION REQUIREMENTS

3.1 GEOTEXTILE STORAGE, PROTECTION AND HANDLING

- A. Storage and handling of the geotextiles shall be in accordance with the manufacturer's recommendations, except that in no case shall the geotextile be exposed to direct sunlight, ultraviolet rays, water, temperature greater than 140 degrees Fahrenheit, mud, dirt, dust and debris, to the extent that its strength, toughness or permeability are diminished. Each geotextile roll shall be labeled or tagged to provide product identification sufficient for inventory, quality control and quality assurance purposes. Exposure of geotextile fabrics to the elements between laydown and cover shall be a minimum of 14 days. At the time of installation, the geotextile shall be rejected and replaced with no additional payment if defects, rips, flaws, deterioration or damage incurred during manufacture, transportation, storage or installation (construction) is evident.

3.2 GEOTEXTILE CONSTRUCTION

- A. The surface to receive the geotextile fabric shall be prepared to a smooth condition free of obstruction, depressions and debris. The surface shall be excavated, graded and prepared to the lines, grades and elevations shown on the Drawings and/or Construction Standards.
- B. Geotextiles used along channels shall be placed with the machine direction of the geotextile parallel to the channel. Successive geotextile sheets shall be overlapped in such a manner that the upstream sheet is placed over the downstream sheet and the upslope sheet over the downslope sheet.
- C. Geotextiles used for two to one slopes or greater shall be placed with the machine direction perpendicular to the toe of the slope. The geotextile sheets shall be overlapped in the direction of the anticipated movement of the water.
- D. Adjacent pieces of geotextile may be joined by sewing or by overlapping and pinning. The minimum overlap shall be 18 inches except when placed under water. When placed under water the overlap shall be a minimum of 3 feet. Securing pins shall be steel, 3/16 of an inch in diameter, 18 inches long, pointed at one end and fabricated with a head to retain a steel washer having an outside diameter of no less than 1.5 inches. Securing pins with washers shall be inserted through both strips of overlapped geotextile and

spacing intervals as indicated in Table 1 below. Securing pins shall be along a line through the midpoint of the overlap. The geotextile strip shall be placed so that the lower strip will be overlapped by the next higher strip. Pins shall be driven until the washer bears against the geotextiles and secures it firmly to the ground.

TABLE 1
SECURING PINS SPACING INTERVALS
FOR GEOTEXTILE FABRIC OVERLAP

SLOPE (horizontal:vertical)	PIN SPACING PER ROW (center-to-center)
3:1 or steeper	2 feet
3:1 to 4:1	3 feet
4:1 or flatter	5 feet

Whether the fabric is joined by sewing or pinning, additional pins shall be installed as necessary to prevent any slippage of the fabric regardless of location.

- E. The geotextile shall be placed in such a manner that placement of the overlaying materials will not excessively stretch or tear the geotextile and will not pull the required overlap or seam apart. Construction equipment will not be allowed on the exposed geotextile.
- F. Placement of the riprap or stone shall start from the base of the slope, moving upslope from the center outward. Riprap shall not be allowed to roll downslope and the height drop for riprap shall be kept to less than one foot.

PART 4 - PAYMENT

4.1 METHOD OF PAYMENT

There will be no measurement of geotextile fabric.

4.2 BASIS OF PAYMENT

There will be no separate payment for clearing and grubbing. The cost of this work is to be included by the Contractor in the various other items of the Contract.

SEEDING AND SODDING

PART I - GENERAL INFORMATION

1.1 DESCRIPTION

Work included: Provide either or both plain and mulch seeding, broadcast seeding, or placing approved sod. It includes furnishing and placing seed, fertilizer, agricultural limestone, topsoil, and mulch in a prepared seedbed; or furnishing and placing sod at location shown on the plans. Seeding and sodding also includes all necessary watering.

1.2 QUALITY ASSURANCE

- A. It is the intent of this Seeding and Sodding Specification to require the Contractor to water the seeded and sodded areas as many times as necessary to insure a good, growing finished product at the completion of the project.
- B. The watering of the seed and sod shall continue until germination has been achieved and a satisfactory growth of new grass and/or maintained growth of the sod is achieved.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Materials shall conform to the following requirements as specified in the following subsections of the Indiana Department of Highways Standard Specifications (1988).

Agricultural Limestone	913.02
Fertilizers	913.03
Grass Seed	913.04
Water	913.09(a)
Leguminous Inoculants	913.06
Mulch	913.05(a)
Sod	913.07

2.2 SEED MIXTURE FOR EMBANKMENT AND BAFFLES

- A. The seed mixture for this project shall be applied at a rate of 150 pounds per acre. The mixture shall consist of the following:

Perennial Ryegrass	20 % by weight
Kentucky Fescue	30 %
Annual Ryegrass	20 %
Korean Lespedeza	15 %
Orchardgrass	15 %

2.3 SEED MIXTURE FOR UPLAND AREA

The seed mixture for this project shall be applied at a rate of 120 pounds per acre. The mixture shall consist of the following:

Pennfine Perennial Ryegrass	20 % by weight
Annual Ryegrass	20 %
Orchardgrass	20 %
Proso Millet	20 %
Timothy	15 %
Red Clover	5 %

PART 3 - CONSTRUCTION REQUIREMENTS

3.1 PREPARATION OF GROUND BEFORE SEEDING

- A. The area to be seeded shall be made smooth and uniform and shall conform with the finished grade and cross section shown on the plans. It shall have been given final trimming. No soil to be seeded shall be tilled when in a wet or muddy condition.
- B. The seedbed, if not loose, shall be loosened to a minimum depth of three (3) inches before fertilizer and seed is applied. Where soil is highly subject to erosion and to receive jute mesh, one (1) inch depth of tillage is required.

3.2 FERTILIZING, SEEDING, AND MULCHING

- A. Fertilizer shall be applied and spread uniformly over the area to be seeded and sodded at a rate of 800 pounds per acre. Agricultural limestone shall

be applied at a rate of 1,000 pounds per acre over all areas to receive seeding or sod. Fertilizer and limestone shall be mixed into the top two (2) inches of the soil prior to seeding or sodding.

- B. Seed mixture may be drilled in or mixed with water and the mixture sprayed over the area to be seeded. An approved mechanical method to place the seed in direct contact with the soil may be used.
- C. Seeded areas shall be thoroughly mulched by a method approved by the Consultant. Mulching material shall be applied uniformly in a continuous blanket at a rate of two (2) tons per acre, except wood cellulose fiber mulch shall be applied at a rate of 1,500 pounds per acre. The percent of moisture in the mulch shall be determined in accordance with standard Indiana Department of Highways Specification Section 621.12 (b) (1988).
- D. Mulching material shall be punched into the soil so that it is partially covered. The punching operation shall be performed longitudinally with a mulch tiller. The tool used for punching purposes shall be plain or notched discs having a minimum diameter of sixteen (16) inches. The discs shall be flat or uncupped such as notched coulters commonly used on moldboard plows. Discs shall be placed a minimum of eight (8) inches apart along the axle or shaft. Shaft or axle sections of discs shall not exceed eight (8) feet in length.
- E. The mulch tiller for punching shall be constructed so that weight may be added or hydraulic force from the tractor may push the puncher into the ground. If heavy weights are not used, several trips over the area may be necessary to work part of the mulch into the soil. Care shall be exercised to obtain a reasonably even distribution of mulch incorporated into the soil.
- F. On slopes steeper than 3 to 1, or when specified, the following methods will be permitted for mulching:
 - Method 1: Hydroseeding.
- G. After procedures for holding the mulch in place have been completed, mulch (other than when applied by hydroseeder) shall be watered thoroughly. the seed or soil beneath it shall not be displaced. The mulching material shall be maintained in place satisfactorily until final completion and acceptance of the project.
- H. When seeding is performed between June 1 and August 15, a second

thorough watering shall be applied approximately twenty (20) days after the seeding. Watering shall be done in such a manner as to not displace the seed, sod, or soil underneath it. The Owner or other designated local entity shall continue to water as needed and as required by weather conditions.

3.3 PREPARATION OF GROUND BEFORE SODDING

- A. The area to be sodded shall be made smooth, uniform, and shall conform to the required cross section. Surfaces prepared for sod shall be of sufficient depth below unsodded areas that newly laid sod will conform to the surrounding surface. That is, sod shall not be laid "on top of the ground", but a bed shall be prepared for laying the sod so it will be contained by the surrounding soil.
- B. Prior to placement of sod, the stockpiled topsoil shall be placed, scarified, or disced slightly. A disc, spike-toothed harrow or other similar device shall be used for this purpose. This loosening is to assure bond of the topsoil with the surface on which it is put and to form a uniform surface. Topsoil shall be spread to a uniform depth of six (6) inches and compacted lightly with an approved roller, tamping device, or by other methods.
- C. After the area has been prepared (including the topsoil) agricultural limestone shall be applied at the specified rate of 500 pounds per acre, and fertilizer shall be applied at the rate of 400 pounds per acre. The surface soil shall be loosened to a depth of two (2) inches and then raked before the sod is placed. All clods, lumps, boulders, or waste materials shall be removed prior to placement of the sod.

3.4 LAYING SOD

- A. Sod strips shall be laid carefully by hand. Sod shall be fitted to the grade and sod strips shall be butted together closely to avoid open joints. After laying and initial watering, the sod shall be tamped or rolled as directed by the Engineer to insure contact with the soil underneath and to conform with the surrounding surface. After compaction, the sod shall present a smooth, even surface, free from lumps and depressions.
- B. Sod placed on slopes greater than 3 to 1 shall be pegged. The pegs shall be spaced not over two (2) feet apart, and each strip measured lengthwise of the strip. Pegs shall be driven down until no more than one (1) inch protrudes above the surface of the sod.

- C. Pegs shall be wood, at least 1/2 inch by 3/4 inch by 12 inches. No pins shall be allowed in lieu of the wooden pegs.

3.5 WATERING SOD

Sod shall be watered thoroughly, immediately after placing and kept moist for at least seven (7) days. The Contractor will be required to repair or replace any sod which is not in good growing conditions at the completion of the project.

3.6 SEASONAL LIMITATIONS

- A. Seeding will be permitted only from February 1 to November 15. During other periods, the time of sowing shall be determined by the Engineer, whose decisions will be based upon soil moisture and weather conditions. Seeded areas must be mulched with quality and quantity of material acceptable to the Engineer.
- B. No sod shall be laid during the months of June, July and August unless written permission is obtained from the Engineer. When such permission is granted, the Contractor shall, before laying sod out of season, agree in writing to the following provisions:
 - 1. Sod shall be in good, living, growing condition.
 - 2. Sod shall be placed within 36 hours after cutting and protected from damage during that period.
 - 3. Sod shall be watered sufficiently and otherwise maintained so that it will be in a live, growing condition at the time of final acceptance of the project, provided that the period between placing sod and acceptance is greater than thirty (30) days.
- C. Winter sodding will be permitted when the temperature is above 35 degrees Fahrenheit. No frozen sod shall be laid, nor shall sod be laid on frozen soil. Sod shall be properly protected from drying out and shall be laid within 48 inches after cutting.

3.7 LIMITS OF SEEDING AND SODDING

- A. The limits of seeding shall be all those areas on the project site that are disturbed due to construction. The areas to be seeded shall be done only after approval by the Engineer, and any disturbed areas outside these limits shall be repaired at the Contractor's expense.

PART 4 - PAYMENT

4.1 METHOD OF MEASUREMENT

There will be no measurement of seeding and mulching.

4.2 BASIS OF PAYMENT

- A. There will be no separate payment for seeding. The cost of this work is to be included by the Contractor in the various other items of the Contract.
- B. No separate payment will be made for fertilizer, limestone, inoculants, and water.
- C. Payment will be made for sodding under the following item:

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Sodding	Square Yard

- D. It is the intent of this specification to require the Contractor to provide to the Owner good, live, growing grass, and sod areas at the completion of the project. The Contractor shall reseed and/or resod all areas so designated by the Owners representative at no additional expense to the Owner. The Owner or other designated local entity shall provide all necessary watering to meet this intent.